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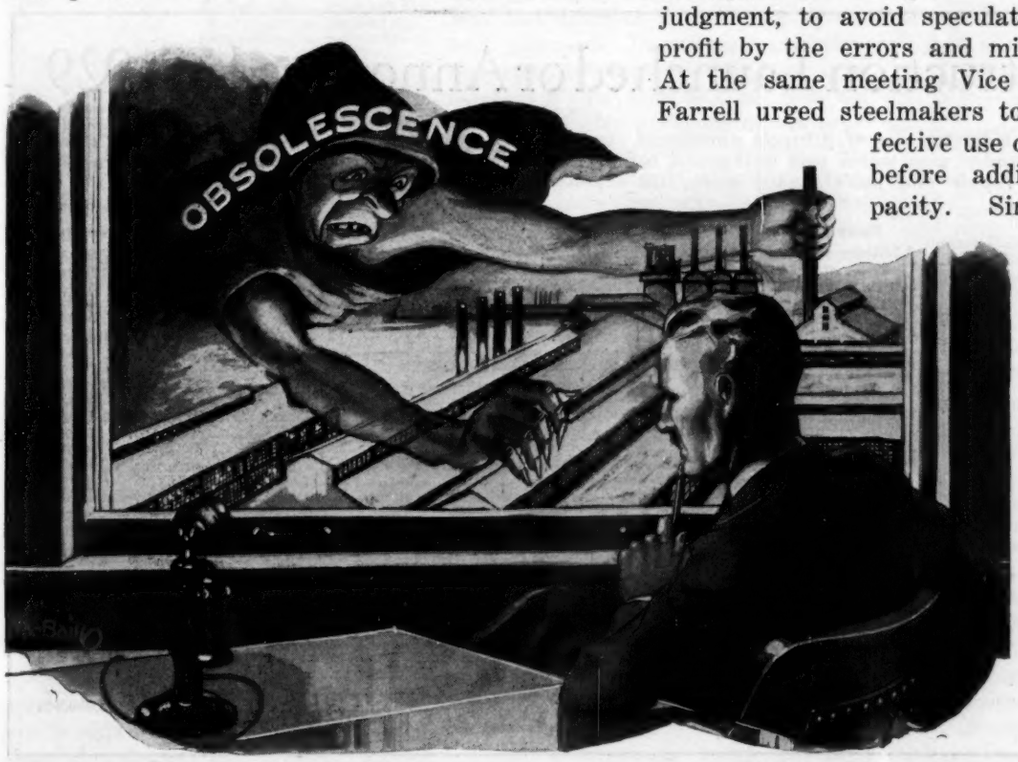
Obsolescence Is Heavy Burden on Iron and Steel Industry

Many Factors Menace Effective Life of Plant and Equipment—Obsolescence Responsible for Much of Present Abnormal Expansion Program

By E. L. Shaner
Editor, Iron Trade Review

ANNOUNCEMENT that the Illinois Steel Co. will build extensive additions to its Gary steelworks and mills, taken in conjunction with the somewhat unusual volume of new construction and betterments launched by other steel producers since the first of the year, has revived discussion of the problem of over-capacity. The question arises as to whether or not there is danger of expanding facilities beyond the reasonable requirements of normal demand.

This query is especially pertinent in view of the warnings voiced at the last meeting of the American Iron and Steel institute. It will be remembered that President Charles M. Schwab declared that "never before was it more incumbent upon us to temper our new plans with good judgment, to avoid speculative building, and to profit by the errors and mistakes of the past." At the same meeting Vice President James A. Farrell urged steelmakers to make the most effective use of existing equipment before adding to present capacity. Since the time these



OBSOLESCENCE is the arch fiend of the steel industry. Steelmakers pay hundreds of millions annually to escape his clutches

warnings were issued, similar admonitions have been given by other executives.

In view of this rather general recognition of the dangers of excessive expansion, what interpretation can be placed upon the fact that since the first of the year capital expenditures for new plants, extensions and improvements totaling more than $200,000,000 have been announced by steel producers?

Is this amount excessive? Are the new projects fully justified by the probable future requirements for steel?

In attempting to answer these questions it is well to keep in mind on one hand the record-breaking demands that have been made on the steel industry during the past half year, and on the other hand the terrific toll taken annually by obsolescence. The more one studies the problem, the more one realizes the complexity of the task of correlating production to consumption. Numerous considerations other than mere additions of plant and equipment are involved. Shifts in the geographical center of consumption; changes affecting transportation costs; development of new materials, methods and products; necessity of retaining a reasonable balance between steelworks and finishing mill capacity; substitution by consumers of one type of steel for another due to altered methods of fabrication or manufacture; and numerous other factors constantly threaten the steel producer. Any one of these may rise up suddenly to seriously undermine the effectiveness of existing plant and equipment. Furnaces and mills erected only a few years ago at great expense are not immune from obsolescence caused by these changes.

Seeking Greater Efficiency

EVIDENCE of this is offered by many of the projects now in process of construction. For instance, with three exceptions, all of the new equipment in sheet mills is being installed primarily in the interests of efficiency. The continuous normalizing furnaces, now in general favor, produce results unattainable by the units they are replacing, reduce the cost per ton appreciably and increase production. Their acceptance by sheetmakers may be attributed to the desire for efficiency, rather to the urge for more capacity.

The $10,000,000 being expended by the A. M. Byers Co. at Ambridge, Pa., for a new puddled iron plant, while extending the capacity of that company, is the outgrowth of the development of a new process. So great is the faith of officials in this new method of puddling that there is a possibility that the new equipment eventually will supplant all of the furnaces in which the hand process is employed. Here is a case where scientific development has contributed to obsolescence.

Another illustration of this is afforded by the expenditure by the Central Alloy Steel Corp. of $1,000,000 for equipment required to produce Enduro-Nirosta steel, a new corrosion-resisting product. The Ludlum Steel Co. likewise is making changes and additions at its Watervliet and Dunkirk plants for the same purpose.

Developments in the fabrication of steel pipe have tended to make certain lapweld mills obsolete. The Republic Iron & Steel Co. has announced a construction program involving $10,000,000 for electrifying mills and installing electric welding equipment covered by recently acquired patents.

The National Tube Co. is undertaking extensive changes, particularly at McKeesport, Pa., where open-hearth furnaces are being installed to substitute open-hearth steel for a portion of the bessemer capacity. Seamless pipe mills are supplanting some of the lapweld mills, which according to an official statement are "rapidly becoming obsolete."

Transportation costs and geographical considerations figure importantly in several extensive undertakings. The new mills being installed by the Gulf States Steel Co. reflect the growth of southern markets and the advantageous location of its properties for water shipment.

Adjustment of capacity to more closely approximate consumption in the Chicago district is one of the factors believed responsible for the projected extension of the Gary works of the Illinois Steel Co. During the present period of sustained heavy demand part of the requirements of Middle West consumers have been sup-

New Construction Launched or Announced in 1929

The following is a partial list of projects announced since the first of the year. It does not include considerable work now under way which was authorized before 1929 *or which was held over from* 1928 *programs. It does not include repair and maintenance work, the expense of which is diverted from earnings.*

Company	Description of Construction	Amount Involved
Algoma Steel Corp.	Additions to 2 merchant mills, increasing finished steel production 50,000 tons annually	$ 2,500,000
Apollo Steel Co.	To erect steelworks embracing 4 to 6 open hearths	(not stated)
Bethlehem Steel Co.	Improvements at Cambria plant	10,500,000
Blair Strip Steel Co.	New cold rolls, shears and additional annealing equipment	(not stated)
Byers Co., A. M.	New puddled iron plant at Ambridge	10,000,000
	Changes at Warren, O. plant	1,500,000
Canton Rolling Mills Co.	Improving Carnahan works	200,000
Central Alloy Steel Corp.	Expansion in connection with new corrosion-resisting steel	1,000,000
Continental Steel Corp.	Six new sheet mills	(not stated)
Cooke & Co., Wm.	Proposed plant in Canada	750,000
Davison Coke & Iron Co.	Remodeling blast furnace, building coke ovens, etc. at Neville island	5,000,000
Empire Steel Corp.	Improvements at Falcon plant	250,000
	Addition to Ashtabula plant	(not stated)
Great Lakes Steel Corp.	Steelworks, semifinished and hoop, band, shape, plate and hot and cold rolled finishing mills	20,000,000
Gulf States Steel Co.	Blooming mill, universal plate and sheet mills	5,000,000
Illinois Steel Co.	14 open-hearth furnaces, blooming, slab, plate and structural mills at Gary	(not stated)
Inland Steel Co.	New 10-inch bar mill, jobbing mill and 74 coke ovens	(not stated)
Intercontinental Pipe & Mining Co.	Cast pipe plant at Chelsea	3,000,000
National Tube Co.	Changes at McKeesport	20,000,000
	Converting lapweld mill to seamless mill at Lorain	5,000,000
Newton Steel Co.	Sheet mill at Monroe	5,000,000
Ohio Seamless Tube Co.	Increasing capacity 40 per cent	400,000
Otis Steel Co.	Improving sheet mill facilities	300,000
Pittsburgh Steel Co.	By-product coke ovens	(not stated)
Republic Iron & Steel Co.	Electric welded pipe plant, electrification of mills, etc.	10,000,000
Tarentum Steel Corp.	New six-mill auto sheet plant	3,000,000
Timken Roller Bearing Co.	Mills at Gambrinus, O.	(not stated)
West Leechburg Steel Co.	Improvements, including replacing of 12-inch hot strip mill	800,000
Wisconsin Steel Co.	New blast furnace and coke ovens	2,000,000

plied from eastern mills. Shipments of steel on the Great Lakes also enter into this situation.

Other examples of the influence of geographical considerations are afforded by the two new establishments now under construction in southern Michigan. Erection of sheet mills at Monroe by the Newton Steel Co. is not surprising in view of this company's strong position in the manufacture of automobile sheets. The new location gives the Newton company production facilities several hundred miles nearer to its important consumers.

Dominance of the automobile industry as the best customer of the steel industry largely explains the motive for the erection of steelworks, semifinished and finishing mills at Ecorse by the newly formed Great Lakes Steel Corp. An additional influence probably is to be found in the desire of Detroiters to establish a flourishing steel producing and finishing center as an adjunct to its automobile industry.

In reviewing the foregoing projects, as well as others listed in the accompanying table, one should not overlook the extensive alterations that constantly are going on throughout the industry. An idea of the capital expenditures for extensions, additions and improvements, and the cost of repairs and maintenance, may be gained from the following figures for 1928 published by a number of typical steel producers:

	Capital expenditures for extensions, additions and improvements	From earnings for repairs and maintenance
Subsidiaries of United States Steel Corp.....	$51,570,108	$106,127,490
Bethlehem Steel Corp..	19,943,804	41,177,685
Pittsburgh Steel Co....	897,180	2,862,002
Otis Steel Co.....	2,417,199	2,388,563
Central-Alloy Steel Corp.	2,187,970	3,320,410

These figures indicate that "repairs and maintenance," which include repairs, maintenance, blast furnace and coke oven relinings, and extraordinary replacements, amount to about $220,000,000 annually for the entire industry. A conservative estimate would place the amount appropriated annually from earnings for deteriorations and obsolescence at around $100,000,000. Thus the annual cost of what we may term "wear and tear and obsolescence" is in excess of $300,000,000. In other words, the American iron and steel industry now must spend more than a quarter of a billion dollars annually merely to maintain its present facilities at modern standards. It is doubtful whether any other branch of American industry is saddled with such a heavy burden of expense for repairs, maintenance and obsolescence, unless it be the railroads.

It has been estimated that upwards of $1,650,000,000 was spent between 1914 and 1926 in rebuilding and modernizing the plants and properties of the larger steel companies. This represents an average capital expenditure of $137,000,000 annually during this period, indicating that obsolescence has been a tremendous burden over a period of many years.

Must Survey the Market

IN THE light of the foregoing figures it does not appear that the new construction now before the steel industry is excessive, or that much of it is of a speculative character. It is known that in the case of the Illinois Steel Co. plans, a thorough study of market conditions, costs, consumption figures, distribution facilities, transportation, etc., was made and an elaborate research report examined from all angles before a decision to go ahead was announced. Steelmakers everywhere are more cautious under the new conditions of competition than they were in the days of John W. Gates. It is unlikely that any important producing company would launch an extensive expansion program without first analyzing the demand.

This does not mean that all hazards can be removed from the steel industry, or for that matter, from any branch of business. In contemplating new facilities the steelmaker, like any other business man, must rely on such information as he is able to collect, and interpret it according to his best judgment. In the steel industry, one executive may consider the high demand of the first half of 1929 as normal and plan his construction program to fit that interpretation. At the other extreme is the more conservative individual who believes the first-half business was a flash in the pan, and that 1927 was a normal year. Undoubtedly the safe interpretation lies somewhere between these extremes.

Enterprise is a valuable asset in any business, yet if it is carried to excess it may cause trouble. Recently two successful business men were discussing the failure of a concern whose officers had engaged too freely in speculation.

"Well," said one, "that just shows that in these days of competition, you must not get too far off first base or you'll be put out."

"Yes," replied the other, "that's good business, but just the same, unless you take a big lead off first, you'll never get to second."

These observations apply to the planning of new steelmaking facilities. It is unwise to build too boldly, and to be too conservative is disastrous. Fortunate is the steelmaking organization whose executives have vision, initiative and enterprise tempered with caution and sound judgment.

Metals Institute Group Announces Papers

Papers to be presented at the annual fall meeting of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers at Cleveland the week of Sept. 9 during the National Metal exposition and congress have been announced. This is the third meeting of the institute held during the annual metal show. The seventeen tentative papers are as follows:

"Metallography of Commercial Thorium," by E. S. Davenport, Westinghouse Lamp Works, Bloomfield, N. J.

"The System Cadmium-Mercury," by Robert F. Mehl and Charles S. Barrett, Naval Research Laboratory, Anacostia, D. C.

"Note on the Crystal Structure of the Alpha Copper-Tin Alloys," also by Robert F. Mehl and Charles S. Barrett.

"Cold Working of Metals," by R. L. Templin, Aluminum Co. of America, New Kensington, Pa.

"An Investigation To Determine the Eutectic Composition of Copper and Tin," by G. O. Hiers and G. P. deForest, research laboratory, National Lead Co., Brooklyn, N. Y.

"The Effect of Alloying on the Permissible Fiber Stress in Corrugated Zinc Roofing," by E. A. Anderson, New Jersey Zinc Co., Palmerton, Pa.

"A Method of Determining the Orientation of the Crystal in Rolled Metal from X-ray Patterns Taken by the Monochromatic Pinhole Method," by Wheeler P. Davey, C. C. Nitchie and M. L. Fuller, New Jersey Zinc Co., Palmerton, Pa.

"Studies in Metal Crystal Orientation in Determination of Orientation of Metallic Single-Crystal Specimens by High-Voltage X-rays," by Thomas A. Wilson, General Electric Co., Schenectady, N. Y.

"Metal Recoveries in Secondary Aluminum Practice," by Dr. R. J. Anderson, Fairmount Mfg. Co., Fairmount, W. Va.

"The Reclaiming of Nonferrous Scrap Metals at Metal Manufacturing Industries," by Francis N. Flynn, metallurgist, Milwaukee.

"The Manufacture of Wire Bars from Secondary Copper," by W. A. Scheuch and J. Walter Scott, Hawthorne works, Western Electric Co., Chicago.

"Correlation of Ultimate Structure of Mechanically Deformed Copper with Its Electrical Conductivity," by C. T. Eddy and R. W. Drier, Michigan College of Mining and Technology, Houghton, Mich.

"Secondary Bronze," by H. M. St. John, Detroit Lubricator Co., Detroit.

"Battery Lead," by F. F. Colcord, United States Smelting, Refining & Mining Co. Inc., New York.

"Reclaiming of White Metal Waste," by Mr. Potter, Federal Mogul Corp., Detroit.

"Cuppy Wire," by Mr. Remmers, Hawthorne works, Western Electric Co., Chicago.

Title unknown—by E. H. Dix Jr., Aluminum Co. of America, New Kensington, Pa.

Convention Dates Set

Announcement has been made of the annual convention of the American Manganese Producers' association at Mayflower hotel, Washington, Sept. 9-10. A review of the industry will be presented and development of domestic manganese discussed. H. A. Pumpelly, Metropolitan Bank building, Washington, is secretary.

Metallography Simplified for Practical Use In Shop

By
E. Preuss
G. Berndt
M. v. Schwarz

Translated from the German by Richard Rimbach

Appendix—Supplementing Microscopic Testing by Other Metallographic Methods

IN PREVIOUS discussions it has been pointed out several times that microscopic examination is not always sufficient to arrive at an unequivocal decision, but that in order to obtain this decision the examination must be supplemented by other chemical or physical tests.

An error, which may occur on delivery of material or through careless storing different materials, is the mixing up of ordinary carbon and alloy steels, especially high-speed steel. The latter is hardened at high temperatures of about 1100 to 1400 degrees Cent. At this temperature an ordinary carbon steel would be overheated or even burnt and consequently spoiled. A simple method to distinguish between the two consists in determining the specific gravity with a hydrostatic balance. A spring balance also is often sufficient for weighing in air and water.[73] Since the specific gravity of ordinary steel is about 7.5 to 7.8, and that of high-speed steel, 8.0 to 8.6, a fairly rough determination of gravity is sufficient.

Another simple although not always certain distinguishing characteristic is the spark test.[74] For this, a sample is ground on an emery wheel and the sparks are observed, the results depending somewhat upon the type of emery wheel usd. Fig. 225 represents diagrammatically the characteristic grinding sparks of the most important varieties of steel. Types of steel used and descriptions of the sparks are given as follows in the numerical order in which they appear in Fig. 225:

1. Soft carbon steel for case hardening, with about 0.12 per cent carbon; long club-shaped sparks, smooth light lines and no small stars.

2. Medium soft carbon steel or steel of medium hardness, with about 0.5 per cent carbon; long club-shaped lines which split under formation of a few small simple stars of light yellow color.

3. Medium hard steel which is normal tool steel, with 0.9 per cent carbon; shows almost no club-shaped sparks, but instead numerous little light yellow stars.

4. Very hard carbon steel or hard tool steel, unalloyed, with about 1.2 to 1.4 per cent carbon; vivid sheafs of sparks consisting of many fine little light yellow stars which often subdivide and burst.

5. Manganese hard steel with 10 to 14 per cent manganese, shows numerous bundles of sparks or wine yellow color and active dispersion almost perpendicular to the direction of flying sparks.

6. High-speed steel with about 10 per cent tungsten, 4 per cent chromi-

Next Installment Ends Metallography Series

WITH the appendix, of which the accompanying is the first of two installments, the current metallography series comes to a conclusion. The authors, E. Preuss, G. Berndt and M. von Schwarz are appending their series of chapters of the simplified treatise on metallography for practical use in the small shop, with a discussion of microscopic testing by other metallographic methods. A part of this installment is given over to distinguishing between the different types of steel by the spark test. In presenting the foregoing chapters translated in English from the well-known German book on the practical application of testing iron and steel by etching and with the aid of a microscope, IRON TRADE REVIEW *has endeavored to supply its readers with an accurate and comprehensive guide.*

[73] The balance of M. von Schwarz for determining the gravity, Zentralbl. f.Min. etc. 1910. No. 14, and Ferrum, Vol. 11, No. 3 and 4, 1913-1914 can be used not only for light alloys and the determination of ferro-silicon contents, but also conveniently here.

[74] M. Berman, Zeitschr. d. Ver. deutsch. Ing. Vol. 53, Page 171, 1909.

um, and about 0.7 per cent carbon shows several interrupted, dotted, brownish-red spark lines with ball-shaped, sometimes diverging end sparks of dark blood red color. Some of the spark ends burst into slightly lighter red small stars of few rays.

7. Tungsten steel with about 1.3 per cent carbon behaves similarly to 6, but shows some spark lines which run out into actively bursting lighter stars of light yellow color, while the spark lines appear dark red. The bundles of rays show ball-shaped ends.

8. Silicon steel shows long, club-shaped, light to whitish yellow light lines between single sheafs of sparks.

9. Chromium steel shows in the spark test dark yellow spark lines with ball-shaped ends, between which occur more or less numerous and active sheafs of light depending upon the carbon content.

10. Chrome-nickel steel or structural steel with about 3 to 4 per cent nickel and about 1 per cent chromium, shows long yellow spark lines with single bundles of rays.

As is apparent, a fairly accurate knowledge of the individual spark picture is required to determine the various kinds of steel with only a fair degree of certainty. It is further presumed that a sharp grained medium-hard emery wheel is used, running with a peripheral speed of from 12 to 17 feet per second, and particularly that the samples are always pressed against the wheel with the same pressure. In general it is best to carry out the examination by comparing the sample with a steel of known composition. It is absolutely necessary that the wheel be cleaned after each test so that no particles from a previous test remain on the wheel to disturb the spark picture.

It is evident that for a more exact explanation of photomicrographs a chemical analysis also must be made and above all, the carbon content determined because it is difficult to detect the type of steel from photomicrographs when more than 1 per cent of carbon is present.[75] Determining the exact location of the critical points from the constitutional diagram, Fig. 80, is absolutely necessary.

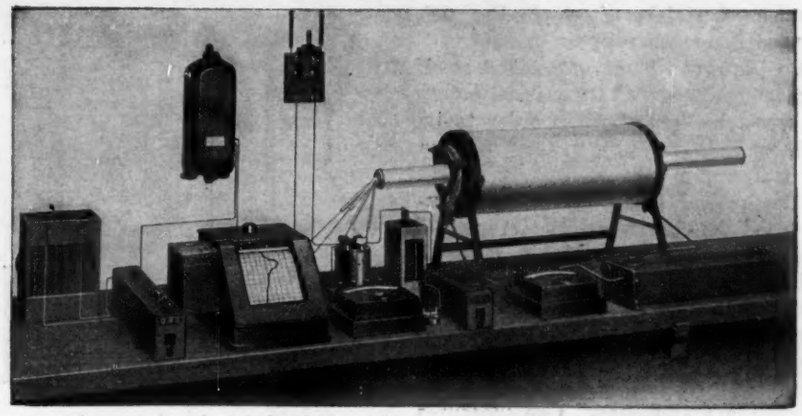


Fig. 226—Critical point arrangement with double-curve recorder

In case of doubt the critical points can be determined in an electric furnace. A sample of the steel is placed into the furnace, preferably in the form of a hollow cylinder in the center of which a thermocouple protected by thin porcelain tubes is introduced. It is convenient, but not necessary, if a second thermocouple is put into the furnace in a porcelain protection tube, the remainder of the furnace being filled with infusorial earth. During heating, the two thermocouples are read at definite time intervals of every 5 or 10 seconds, and with the temperatures plotted as ordinates against the time as abscissae, as shown for lead in Fig. 72. The critical points are then noticeable as horizontal straight lines or as changes in the direction of the curve. On account of the necessary regulation of the heating current, the heating curves do not always have a regular course. It is, therefore, more advisable to take the cooling curves with the current switched off. A still better idea can be gained if the differences of the readings of the two thermocouples are plotted against those of the couple in the porcelain or nickel comparison body.

For determination of the critical points special apparatus can be used. Formerly the double-mirror galvanometer of Saladin,[76] was used, but it is extremely sensitive and for this reason the double-curve recorder of

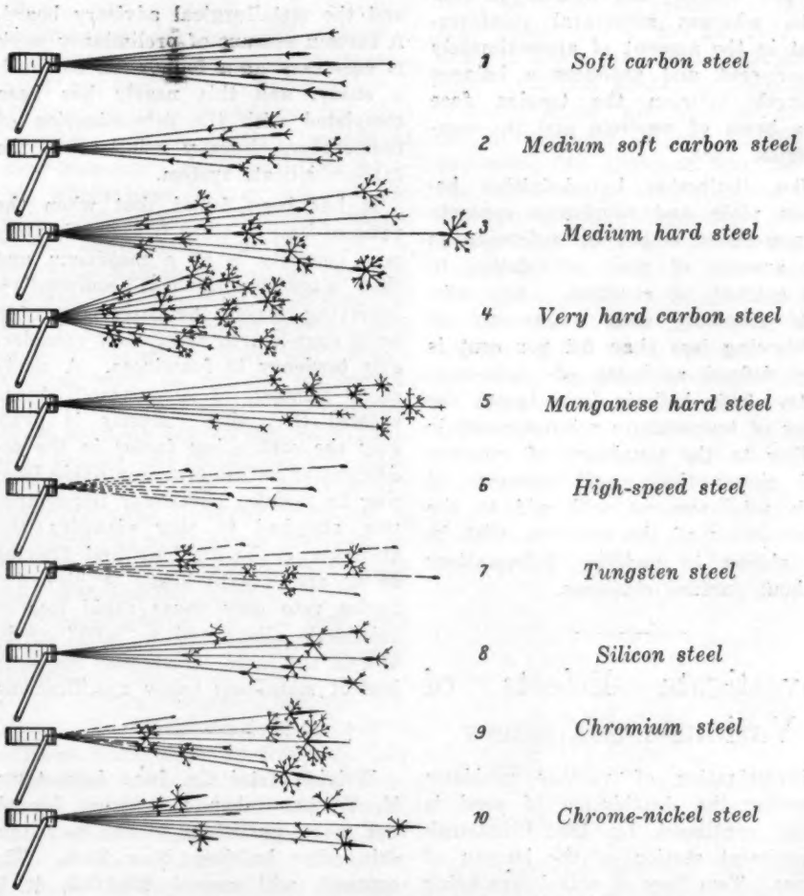


Fig. 225—Typical grinding sparks of various steels

[75]Exact information for the different analyses are found according to to Hinrichsen-Memmler, Das Materialpruefungswesen, Second Edition, and O. Bauer and E. Deiss, Probeentnahme und Analyse von Eisen und Stahl. Berlin, Julius Springer 1922.

[76]For the wiring diagram see M. von Schwarz. Metallphysik.

Siemens & Halske, shown in Fig. 226 is used more generally at present.

For different kinds of alloyed steel, the determination of the critical points is especially important in order to be able to hold the proper temperatures in heat treatment.

The critical point apparatus manufactured by Leeds & Northrup Co., Philadelphia, is shown in Fig. 227. In this apparatus the sample under test, and a body which will heat at a uniform rate and having no transformation points, are heated in close contact one with the other. Two thermocouples are employed. One measures the temperature of the sample, the other the temperature difference between the sample under test and the second body. Temperatures are plotted as one ordinate and the corresponding temperature differences as the other. So long as both sample and the second body heat uniformily there will be no change in the temperature-difference ordinate. When, however, the temperature of the sample remains stationary or lags behind the temperature of the second body, due to a transformation in the steel, the temperature difference ordinate, formerly approximately zero, undergoes a large percentage change even though the actual change in temperature difference is small. The critical point machine of the Brown Instrument Co., Philadelphia, which operates on the same principle, is shown in Fig. 228.

Exports of tungsten ore from Shanghai, China, to the United States in 1928 were more than twice the shipments in 1927, according to the department of commerce.

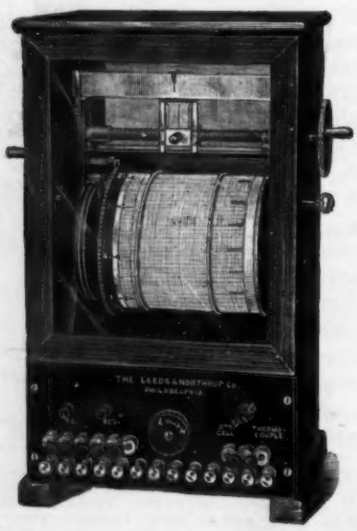


Fig. 227—Critical point apparatus manufactured by Leeds & Northrup Co., Philadelphia

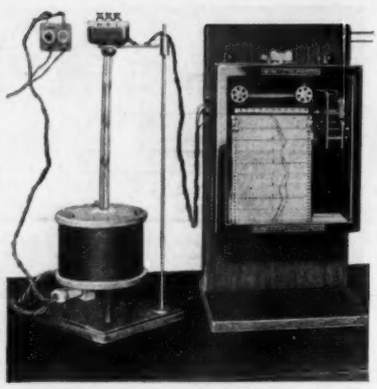


Fig. 228—Critical point machine manufactured by Brown Instrument Co., Philadelphia

Cement, Concrete Data Given in Bulletin

So-called temperature and shrinkage reinforcement in concrete provides an amount of steel much less than the amount used for so-called structural reinforcing, according to a bulletin on physical and mechanical properties of portland cements and concretes issued recently by the engineering experiment station, Purdue university, Lafayette, Ind. Temperature reinforcement provides a volume of steel somewhat less than 0.5 per cent of the volume of concrete, whereas structural reinforcement in the amount of approximately 1 per cent and produces a balance strength between the tension face of a beam of concrete and the compression face.

The distinction by definition between plain and reinforced concrete is sometimes stated by reference to the amount of steel in relation to the amount of concrete. Any concrete structure with an amount of reinforcing less than 0.2 per cent is then defined as being of plain concrete. This bulletin investigates the effect of temperature reinforcement in adding to the toughness of concrete and shows that small amounts of such reinforcement will add to the extensibility of the concrete, that is, its ability to undergo deformations without surface checking.

Investigate Effects of Various Deoxidizers

Investigation of various problems affecting the deoxidation of steel is being continued by the Pittsburgh experiment station of the bureau of mines. Two lines of attack are being pursued, the first mainly from a laboratory standpoint. In this work steel is made containing the various inclusions which result from the addition of deoxidizers. By microscopic and other special methods these inclusions are identified and classified and the chemical reactions which lead to their formation are studied as an aid in fixing the amount of inclusions to be expected from the addition of a certain deoxidizer under given conditions. The second phase of the study is carried out on full size open-hearth furnaces where metallurgists follow the working of heats, taking frequent samples and observations. When the heat is nearly finished, a deoxidizer is added and its effect on the steel noted. The samples taken reveal the action of the deoxidizer and chemical methods indicate the relative cleanliness of the steel.

Viscosity Important in Open-Hearth Slags

Experimental work for the purpose of determining the viscosity of open-hearth slags and the effect on this property exercised by variations in composition and temperature is being conducted at the Pittsburgh experiment station of the United States bureau of mines, in co-operation with the Carnegie Institute of Technology and the metallurgical advisory board. A certain amount of preliminary work is necessary as a foundation for such a study, and this nearly has been completed with the determination of temperature-viscosity relations in the calcium silicate system.

It has been found that when the ratio of lime to silica is approximately one, viscosity is at a maximum and that slags having this composition, occurring during the early part of a basic open-hearth heat, show considerable tendency to foaminess. A study of a number of open-hearth heats showed that slag viscosity is probably the controlling factor in the coefficient of diffusion of iron oxide from slag to metal. Particular importance was attached to slag viscosity and diffusion in the finishing and pouring of an open-hearth heat. A high diffusion rate may cause rapid loss of oxidizable alloys and a "wild" condition in the ladle, which may result in loss of metalloids below specifications.

Wright Metal Co. Inc., Jamestown, N. Y., has taken a contract for all the metal partitions in the new Lincoln office building, New York. The contract will exceed $500,000, it is understood.

Future Products To Be Made By Combination of Processes

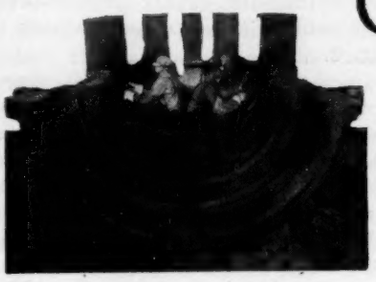


Fig. 1—The men are shown cutting the risers from a steel generator casting by means of gas torches

By H. R. Simonds

Associate Editor, Iron Trade Review

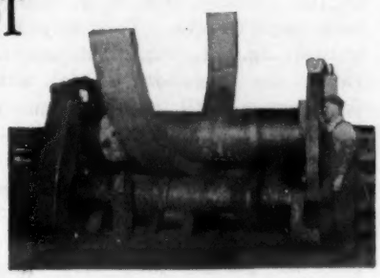


Fig. 2—A slab 7½ x 26 inches and 26 feet long being rolled to size to constitute a generator frame

IN THE manufacture of metal products today, man has at his disposal a choice of several processes, but in many cases custom plays a major part in determining which process shall be employed. Developments in the last year or so, however, give reason to believe that the time is close at hand when custom will be thrown to the winds and products will be redesigned the better to meet the exacting demands of service and economy. In this new scheme the designer will utilize a combination of processes to accomplish his end.

Thus we may expect to find that processes will be adopted because of their respective merits and that methods which have lost ground will regain work that is rightfully theirs. Sound engineering practice calls for the close linking of various methods, for the intricate machine designs of the present day make present such unusual demands that any single method may be wholly inadequate. For example, a Connecticut manufacturer not long ago redesigned a product to use die castings, but later he found that one of the parts of the assembly could best be made as a stamping, with the result that now he has combined the two types into one unit with marked success.

A firm believer in the new idea is J. M. Sampson, foundry superintendent of the Schenectady, N. Y., plant of the General Electric Co. Those who think competition within a large plant such as this any less keen than it is between rival companies in the outside world should follow Mr. Sampson through a few days of his routine work. Here the problems arising from the development of sheet metal work, welding and casting are worked out with considerable ingenuity.

When work comes to Mr. Sampson's desk, which he knows would be more expensive to cast than to build in some other way, he refers it to the department which he knows can turn it out more economically. On the other hand, if work is being produced anywhere else in the whole plant, which might be modified, or adapted to foundry production at a lower cost, he wants to produce it and in nine cases out of ten he does produce it after first demonstrating his own conviction as to the economy.

When asked his attitude toward the development of new fabricating processes, Mr. Sampson said he felt the whole matter hinged on the question of designing ingenuity. Foundrymen have been overlooking design; design of the product itself, not of the pattern or the mold, although even in this latter field, he thinks some negligence has been shown. In the early days of machine design, curves were used with a flourish and an artistic touch which today seems out of place, and the influence of this characteristic still continues.

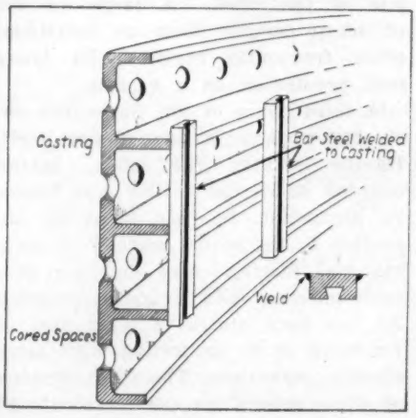


Fig. 3—Sketch showing the general construction of a cast-steel generator frame

Consider for instance, a pedestal for a large journal such as that shown in Fig. 7. This is a common type of casting. It is used in one form or another as support for a large proportion of rotating parts. The design shown is the old style with generous curves and many fillets and bosses. It is typical of the design which gives no regard to cores or molding cost and which, in fact, has furnished an irresistible invitation for the welding fabricator to produce the work.

Generator frames have furnished another similar invitation. For years these have been a source of trouble to many foundrymen. Difficulty has been experienced in holding the molds and cores against the weight of metal at the bottom, and the cast frame frequently warps out of a true circle during the machining. Because of these difficulties and of other features which will be described later, engineers have devoted much attention to designing this particular piece for rolled steel construction.

In an attempt to retain work of this character in the foundry, many labor saving methods in molding and pouring practice have been adopted. A special radial templet has been designed to rotate about a central point and establish the position of cores in the mold. The method of pouring has been improved and standardized. Modern handling equipment has lowered the cost of conditioning and transporting sand. These and other improvements have reduced the cost of casting generator frames, but still the necessity of producing extremely accurate large castings fre-

quently gives the advantage to rolled steel frames.

The General Electric Co. recently has diverted part of its foundry work to other fabricating processes. At Lynn, Mass., part of the steel foundry has been changed to a rolled steel shop. The man formerly in charge of the foundry now is in charge of both departments. This may be regarded as an important step and raises the question as to whether foundrymen will also become steel fabricators. Mr. Sampson thinks the tendency is significant. He feels that any machine part should be studied by a designer familiar alike with foundry and other fabricating methods. Many machine parts which Mr. Sampson has brought back into the foundry now are being made as a combination of castings and rolled shapes, the component parts being joined by welding. This, of course, presupposes that the casting itself is made of steel as the welding of gray iron has not yet been developed to a commercial feasible point.

Mr. Sampson envisages a future jobbing foundry as a large plant well equipped with material handling and labor saving machinery and containing as a definite part of the plant a rolled steel welding and cutting shop. The proprietor of such a plant will not solicit castings production, but instead will quote on machinery parts and then will design and produce them in the most economical and serviceable form.

Depending upon the character of the work, some of the parts will continue to be made from simple castings. Others will be a combination of castings and rolled steel parts

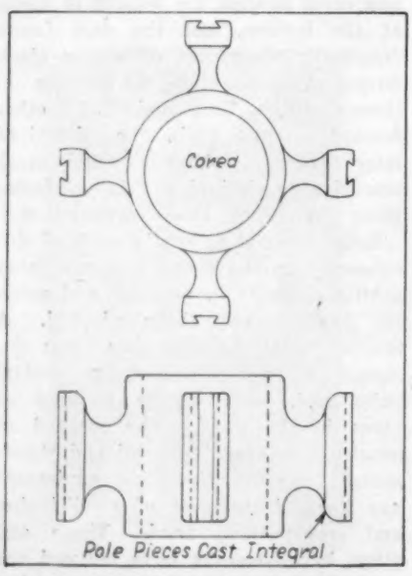


Fig. 5—Rotor frame made of a casting. Redesigned to use welded parts, it appears as in Fig. 6

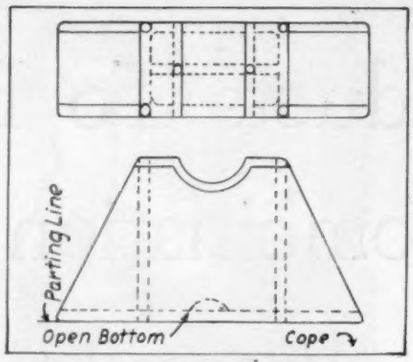


Fig. 4—This cast bearing pedestal was redesigned and made partially by welding, as shown in Fig. 8

and still others will be fabricated entirely from rolled shapes and plates. It is probable that in such a shop, the technique of the cutting and welding torch may be developed for successful use on gray iron. If such development does not occur, Mr. Sampson thinks the steel foundry will grow to absorb a great deal of the common run of jobbing foundry trade.

Must Know Designing

The progressive foundryman must be a designer, in Mr. Sampson's opinion, and so suiting his practice to his theory, Mr. Sampson gives much attention to design. He studies carefully every new piece that is to be made in his foundry to see whether the service to which the piece is intended could be secured by a simpler and lower cost part. This is one phase of his designing work. Another phase is in connection with work being produced outside of the foundry. He has found that by thinking of a given piece as a possible combination of casting and rolled steel part, he is able to redesign along lines which will bring additional work to his foundry and at the same time, will reduce the overall cost of the particular part. An excellent source of ideas along these lines is the scrap pile of the plant. A large amount of scrap coming from an individual piece frequently suggests its lower cost production as a casting.

A third phase of Mr. Sampson's designing work is in the foundry itself. Having secured the work, having adapted its design to low cost foundry production, he then turns his attention to the actual method of making and placing cores and the general molding and foundry practice. As has been stated, a good deal of his work is in connection with large electric generators. The stator frames of these generators are frequently 24 to 30 feet in diameter. These large frames when made in the foundry are essentially bands or hoops, on the inside surface of which are carried the steel punchings which in turn carry the windings. To reduce the weight, the rim when cast is not made solid but consists of a comparatively thin shell stiffened by a series of circular disks or webs. Usually there are five such disks with four channel-like spaces between them. This general construction is shown in Fig. 3.

In the mold, these channel spaces are made with core blocks. It may be readily understood that the accurate placing of four tiers of core blocks around a circle 30 feet in diameter is of itself a fairly difficult job. The width of a 30-foot diameter stator casting may be 6 or 8 feet. It is cast on its side which means that the height of the four tiers of assembled core blocks may be close to 6 or 8 feet also. These blocks, made of baked sand and reinforced with steel, are heavy and it requires much shoring and bracing to hold them accurately in position against the pressure of the metal.

Foundry practice and machine design must go hand in hand. It is only through intimate knowledge of the methods on the molding floor that the designer is able to adapt the design of the casting to most economical foundry production. With the casting design settled, the next step is to devise the best possible molding practice. Large generator

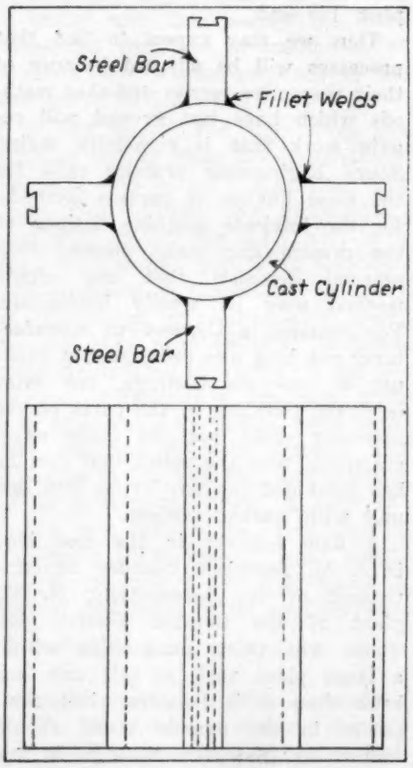


Fig. 6—The rotor frame of Fig. 5 made from both castings and rolled steel parts joined by welding

frame castings, of the general type shown in section in Fig. 3 have been cast in steel foundries for years, and although the job is an exceedingly difficult one and losses still are high, the technique has been developed to a fine point.

At the General Electric steel foundry at Schenectady cylindrical concrete pits have been placed in the molding floor. The generator frame molds are then built up in these pits and are shored back to the concrete wall to prevent the possibility of springing during pouring. The cores are placed accurately as described by means of a radius arm rotating about a central shaft. However, even with the aid of elaborate mechanical equipment in the foundry and of long established foundry procedure, it is impossible to keep so large and relatively thin a casting from some slight warping. Some of the requirements of the finished product are that the slots which support the punchings must be accurately spaced, must be parallel to the axis, and in addition, must fall within close limits as to distance from the central axis.

Expensive Machining Required

To secure this accuracy, expensive machine work is necessary. It is expensive, first, because of the size of the piece worked on, and second, because considerable extra metal must be left in the casting to insure against the slots overrunning the casting. When one watches the elaborate care used in making up a mold for such a casting, watches the slow progress day by day for two or three weeks, with four or five molders constantly at work, and then occasionally sees all this work gone for nothing when the casting for some unexpected reason warps beyond use; when all this is observed, one is not surprised that this particular machine part was taken from the foundry and put into the welding shop. One is surprised that redesigning has returned it to the foundry.

Of course, there are considerations other than cost which may determine the method of constructing a certain machine part. This is particularly true in the design of electrical machinery where magnetic properties may be important. For this reason many generator frames will continue to be made of rolled steel even though the cost may be higher than if they were made of a combination of castings and rolled steel parts joined by welding.

Fig. 6 illustrates a type of generator part where welding and the use of both castings and rolled steel has greatly reduced the cost. The

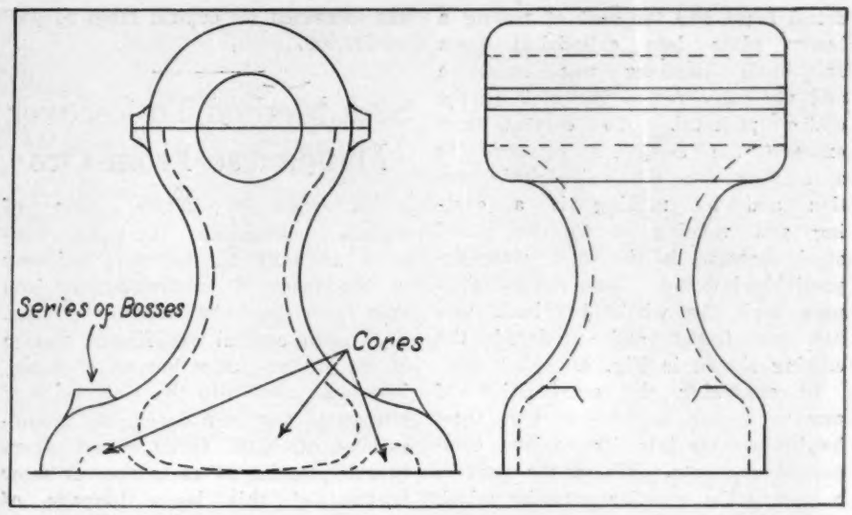


Fig. 7—A large journal made by casting and offering a challenge to the welding engineer

old type of casting is shown in Fig. 5. This is a spider or rotor frame intended to hold four pole pieces. In the original casting it consisted of a heavy barrel with four brackets spaced around the outside, as indicated. In the new design, the casting consists of a plain smooth cylinder which may be cast at low cost. To this cylinder the rolled steel pole pieces are attached by welding. These pieces are machined before they are assembled and are fastened in place by fillet welds. After the frame has been completely assembled, a finish cut is taken in the dovetail blocks which are to take the pole pieces.

Fig. 8 shows a modern pedestal bearing made of a combination of rolled steel parts and castings. It weighs 400 pounds and was made at a cost of $71. It replaces an old style casting weighing 1250 pounds and made at a cost of $115. It frequently happens that the greater latitude in design offered by a rolled steel fabricating shop creates forms and unique styles which advantageously may be carried back to the foundry. In such cases the welding shop unwittingly helps the foundry, and eventually there must be close cooperation between the two. An excellent example of a casting simplified by practice developed in the welding shop is shown in Fig. 4. This is a one-piece casting of a bearing pedestal which was made up for the same service as that shown in Fig. 8, and at a still lower cost.

It is interesting to review the sequence in the development of this last casting. First, there was the old, heavy and gracefully curved pedestal casting, typical of foundry practice for 20 years or more. Then the enthusiasts for rolled steel welding came into the picture, threw tradition aside and made up a pedestal without any castings. Working with flat materials, it was found advisable to make nearly all of the parts of straight line design. However, the journal supports had to be of cylin-

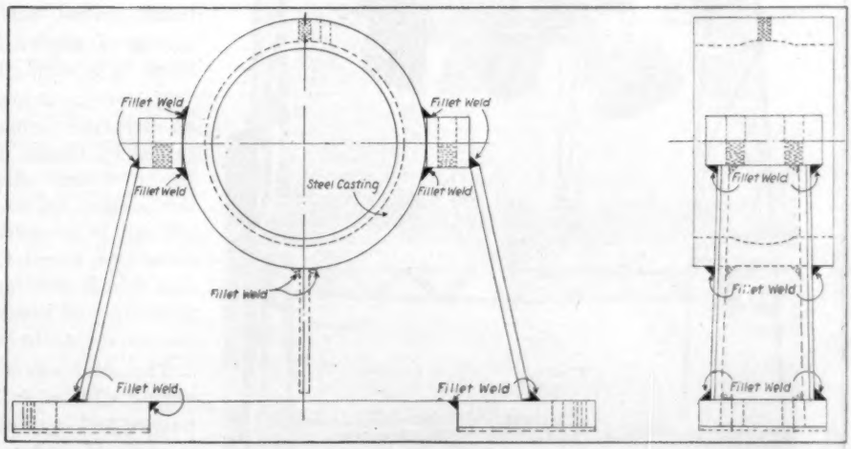


Fig. 8—The redesigned bearing pedestal of Fig. 4. It is a combination of a casting and rolled parts

drical form and the cost of rolling a heavy plate into cylindrical form on small diameter was excessive and naturally raised the cost of the entire pedestal. To correct this expense the designers returned to a casting for the cylindrical portion and by making it a casting and welding it to the rolled steel framework the cost was appreciably lowered. Then the foundryman took the whole job back into his department and produced the casting shown in Fig. 4.

In analyzing the construction of any particular machine part it must be broken up into its various component elements. Where the part is a casting the question must be asked, what phase of its design presents the greatest difficulty. Often one section of a casting will be exceptionally difficult to make and will raise the cost of the whole casting to a disproportionate level. If such a troublesome portion can be made of a rolled steel section, it may solve the problem, keep the price in line and establish the rest of the part as an efficient foundry product.

Detroit Gasket & Mfg. Co., Detroit, has increased its capital from $15,000 to $20,000.

Seek Method To Recover Manganese From Ore

Approximately 150,000 tons of metallic manganese is being supplied annually to the steel industry in the form of manganiferous iron ores from the Lake Superior district. The north central experiment station of the United States bureau of mines, in co-operation with the University of Minnesota has been developing modifications of blast furnace and open-hearth practice so as to recover some portion of this large tonnage of metallic manganese in a form suitable for making ferromanganese, an alloy essential to the steel industry.

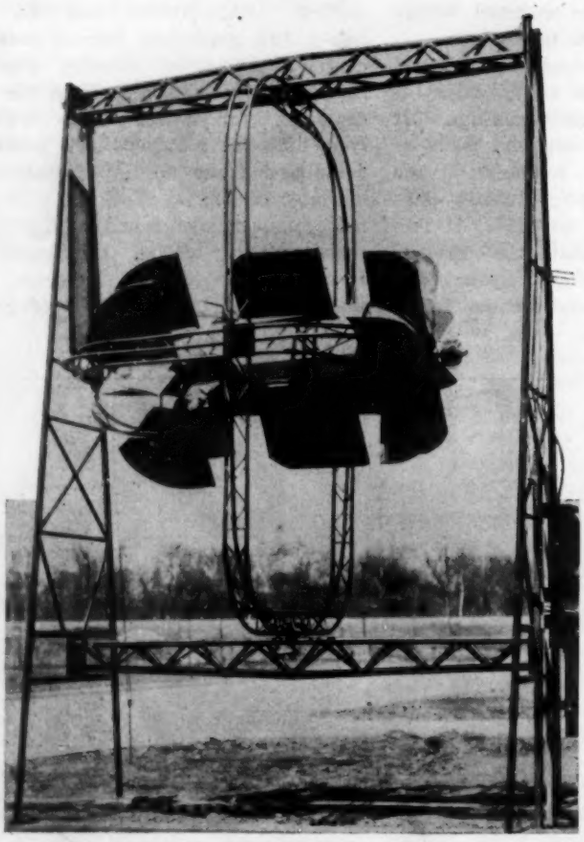
Electric furnace tests were made recently at the Pittsburgh station of the bureau to determine the relative merits of the electric furnace as compared with the open hearth for treating high phosphorus spiegel so as to produce a high manganese slag that can be used for making ferromanganese. These tests indicated that the electric furnace has the advantage of shorter time, more positive control of phosphorus and iron in the slag, more uniform slag lower in silica, and cleaner separation of slag and metal.

"Engineer" Is Defined

A conference was called recently by the American Society of Engineers to discuss the terms "engineer" and "engineman," and to prepare a statement defining "engineer" for submission to the bureau of census. The following statement was agreed upon: "The engineer is a man or woman of professional training or experience, who applies engineering principles to research, design, construction, operation or production, or who imparts technical instruction in these fields. The professional engineer must be carefully differentiated from the machine or engine operative."

Harbison-Walker Refractories Co., Pittsburgh, has adopted a co-operative group insurance plan, underwritten by the Metropolitan Insurance Co. It will cover 5250 employes for $5,250,000 of insurance.

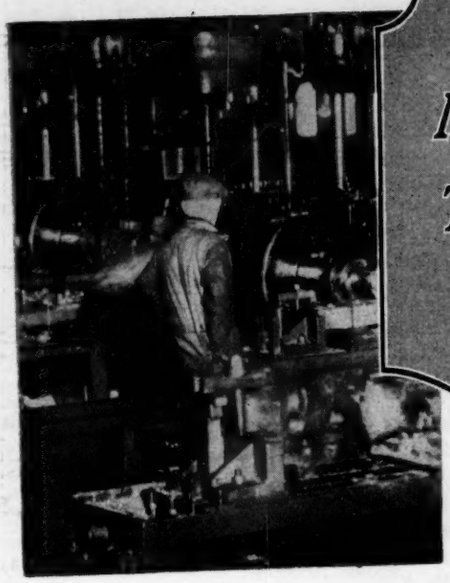
Pilot Training Device Made of Welded Steel Tubing



PILOT training for aviation work presents a problem which is necessarily hazardous if the training is done in the air. Aircraft Appliance Co., 128 North Spring street, Springfield, O., seeking to remedy this difficulty, is manufacturing a device known as a flight tutor for giving primary instruction in the operation of an airplane, a departure from ground devices used heretofore in teaching pupils the art of flying. The flight tutor, shown in the accompanying illustration, consists of a fuselage, in which the student is seated, so mounted and pivoted on a gimbal frame that it is free to assume any position in space that an airplane is capable of assuming in flight. It is provided with standard airplane controls which actuate control surfaces. The entire framework, consisting of gimbal frame and gimbal support, is made from light steel tubing and assembled by welding.

Motion is obtained aerodynamically, the "feel" of an airplane being simulated closely. Power is obtained by means of a propeller driven by a 15-horsepower electric motor mounted on the forward end of the gimbal frame. Telephonic communication to the student is provided, permitting the instructor to give directions at all times. The propeller is a special 5-foot 6-inch unit made of birch and cloth covered. Self-aligning ball bearings are provided at all pivot points. Controls are the standard airplane rudder and stick.

The chief advantage of the device lies in the large saving effected in time in the air in teaching co-ordination and acquainting the student with the fundamentals of flying.



New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

Develops Complete Line of Testing Machines

No. 154

Losenhausenwerk, Dusseldorf-Grafenberg, Germany, represented in this country by Alfred Suter, 200 Fifth avenue, New York, is manufacturing a complete line of testing machines including some 19 types of testing units. Universal testing machines, tensile testing machines, brinell hardness testers, drop or scleroscope-type hardness testers, impact testers, machines for measuring torsional loads, pressure on turning tools and pressure applied to drills, spring testing machines, hydraulic measuring cylinders for gaging heavy loads up to 1000 tons, fatigue testing machines for alternating torsional and repeated alternating loads, and elastic load testers for tensile or pressure loads are some of the devices.

One of the latest designs is a static-dynamic balancing machine, a mechanism for quick determination of static and dynamic unbalance of rotating parts. By means of a special electric balancing device incorporated in the machine static and dynamic unbalance may be determined by single balancing operations, the weights of unbalance being read directly in grams and the plane of unbalance indicated by a pointer.

The company also has developed a wide variety brinell-type ball hardness testing units, one model being a portable hand-operated machine, others constructed for testing thin sheets, shafts, inner surfaces of cylinders and tubes, car wheels, rails and similar unwieldly shapes. Several electrically-driven types also have been developed for production testing. Tangential scales and brinell microscopes for measuring the brinell impression are included in the line.

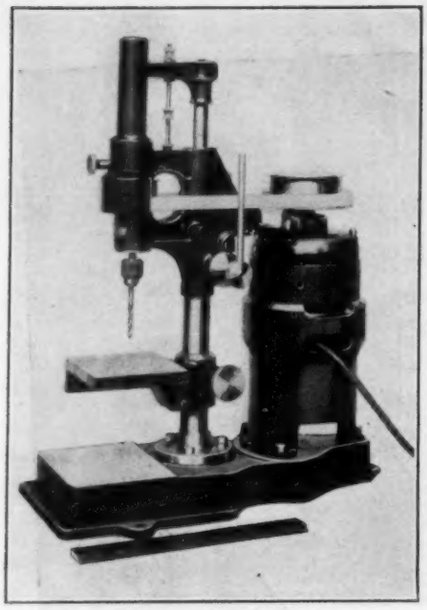
Two Speeds on Sensitive Drilling Machine

No. 155

High Speed Hammer Co. Inc., Rochester, N. Y., has placed on the market a high-speed sensitive drilling machine designed to drill holes ranging from the smallest diameters up to ¼ inch. Spindle speeds for the standard machine, shown in the accompany-

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Metal cutting machine	12-inch automatic cutting and piercing machine	S. A. Asquith & Son	134	July 4	10
Belt idler	Exerts variable pressure on belts to take up slack	Harry M. Perry	135	July 4	10
Saw	Heavy-duty cold metal saw; four speeds, five feeds	Steinle Turret Machine Co.	136	July 4	10
Radiator finisher	Radiator loop boring, facing and tapping machine	Moline Tool Co.	137	July 4	11
Spot welder	Three-speed, flexible-rope power drive attachment	Thomson Electric Welding Co.	138	July 4	11
Drills	Design permits close-up drilling; ⅛ to ⅞-inch sizes	Goodell-Pratt Co.	139	July 4	12
Chucking machines	Automatic platen and indexing turret types	Foster Machine Co.	140	July 4	12
Speed reducers	Fractional-horsepower motor-driven worm and gear types	Janette Mfg. Co.	141	July 4	12
Compressors	Air compressors having improved bearing design	Worthington Pump & Machy. Corp.	142	July 4	12
Bucket	Manually-loaded dump bucket; welded scoop	Edgar E. Brosius Inc.	143	July 11	86
Alloy	Nonferrous; machinable and highly resistant to acids	Burgess-Parr Co.	144	July 11	86
Switch	Magnetic; throws small motors across the line	General Electric Co.	145	July 11	87
Controllers	Reversing drum controllers for heavy-duty work	Westinghouse Electric & Mfg. Co.	146	July 11	87
Metal polishers	Motor-driven; 7-foot flexible shafts	Stow Mfg. Co.	147	July 11	87
Shape cutter	Six-torch universal shape cutting machine	General Welding & Equipment Co.	148	July 11	87
Chamfering machine	Equipped for chamfering wide variety of gear teeth	City Machine & Tool Works	149	July 18	144
Grinders	Bench and pedestal types; enclosed	Hill-Curtis Co.	150	July 18	145
Gage set	Radius gages; 16, varying from 1/32 to 17/64-inch	Lufkin Rule Co.	151	July 18	145
Drill	Multiple-spindle medium-size machine; hydraulic feed	National Automatic Tool Co.	152	July 18	145
Electrode holder	Clamp-type; holds electrode wire in any position	General Electric Co.	153	July 18	145
Testing machines	Complete line of metal testing units	Losenhausenwerk, Germany	154	July 25	203
Drill	High-speed sensitive type; two speeds	High Speed Hammer Co.	155	July 25	203
Saw	High-speed type for cutting off nonferrous shapes	Hunter Saw & Machine Co.	156	July 25	204
Sand mixer	Moving and fixed blades in circular stationary pan	C. & B. Smith, England	157	July 25	204
Drill	Multiple-spindle type; six spindles on 7½-inch centers	Kent Machine Co.	158	July 25	204
Presses	Toggle presses for punching flanges and webs	Beatty Machine & Mfg. Co.	159	July 25	205



No. 155—Sensitive drilling machine

ing illustration, are 2700 and 5500 revolutions per minute. A special three-step pulley may be attached, providing speeds of 1500, 3000 and 6000 revolutions per minute. The hardened and ground spindle is guided by a vertical quill supported by annular ball bearings which take all belt pull. Two ball thrust bearings carry the top of the spindle at the feed arm.

Parts ground to size and alignment include the spindle, quill, feed column, main column, table and base. The spindle travel can be set accurately by the convenient depth gage. Maximum travel is 2¼ inches. The table can be adjusted to suitable height or entirely removed if desired. Ground surface of the base is 4 by 6 inches and will take work up to 7½ inches in height. The front pulley and upper part of the spindle are covered with a detachable guard to insure safety. The machine drills to the center of a 6-inch circle. Overall height is 24½ inches. The unit is supplied with either direct or alternating-current motor for 110 or 220-volt current.

High-Speed Cutoff Saw Has Chain Drive

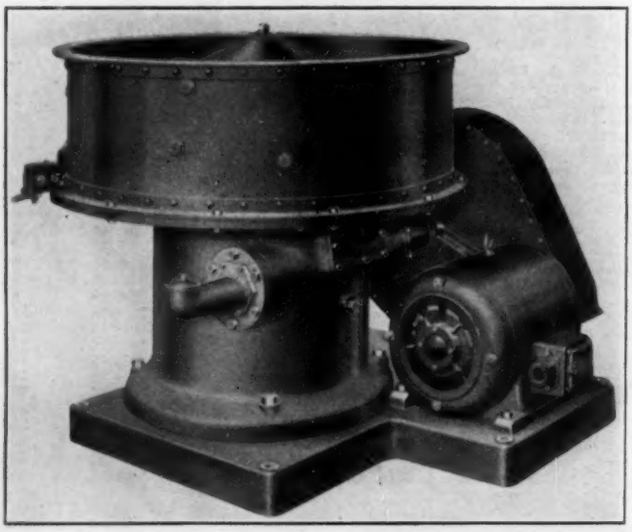
No. 156

Hunter Saw & Machine Co., 5700 Butler street, Pittsburgh, recently has placed on the market a high-speed cutoff saw to cut brass, bronze and copper shapes, solids and tubing at a high productive rate with a minimum of burr. The saw is mounted on a balanced tilting frame and is fed through the material by an offside hand lever, shown in the accompanying illustration. The 10-inch diameter saw blade is driven by a 3-horsepower motor through a roller chain and sprockets, means being provided to keep the chain at the best working tension. Motor and starter are enclosed in the base. Work is clamped with a quick acting eccentric vise. The saw guard tilts out of the way to facilitate saw removal. Angular as well as straight cuts can be made on the machine. Peripheral speed of the blade is 1300 feet per minute while the arbor speed is 525 revolutions per minute. Overall height is 45 inches and table height is 31 inches.

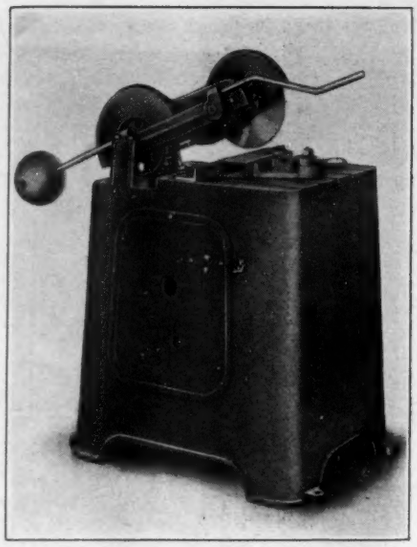
Sand Mixing Machine Is English Product

No. 157

C. & B. Smith, Wolverhampton, has developed and Fordath Engineering Co., West Bromwich, England, is distributing a sand mixing machine with moving and fixed blades arranged in a circular stationary pan, a unit which was displayed at the recent foundry exhibition in London.



No. 157—Sand is mixed in this machine at the rate of 448 pounds in 3 minutes



No. 156—High-speed cutoff saw

It is claimed the action of the blades produces such an intensive kneading, rubbing and squeezing action on the materials to be mixed that complete union takes place in 3 minutes. An automatic discharge empties the batch of 448 pounds in 30 seconds. The pan is mounted over a pedestal casting which carries all bearings and encloses the worm transmission gearing. The transmission is submerged in oil, which is pressure fed to the vertical shaft carrying the moving blades.

When operating on core sand mixed with binder in any form, paste, liquid or solid, it is claimed the machine will distribute rapidly the whole of the bonding material as an even coating over each sand grain. Strong green bond is obtained without detrimental effect on the venting quality of the sand. Strength of the sand is said to be increased 100 per cent and the permeability 45 per cent. The machine is applicable to the preparation of compounds for molding steel castings, for ganisters and similar refractory material and for intensive mixing of dry powders. It is fitted with a self-cleaning, quick-acting discharge shutter, either hand or pneumatically operated. The machine illustrated is actuated by an electric motor driving the transmission shaft through an automatic centrifugal clutch and spur gearing enclosed in a dust tight steel casing.

Single or Cluster Head Work Done by Drill

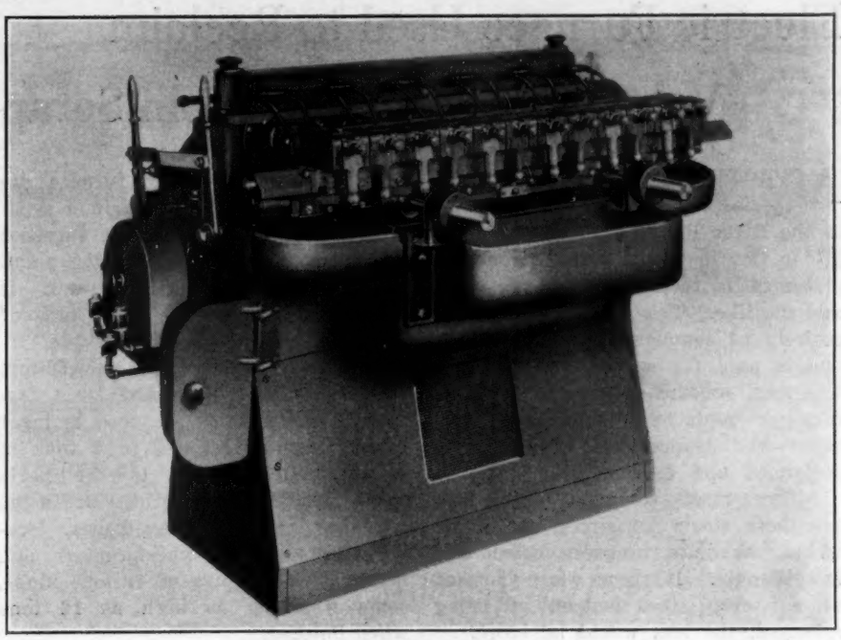
No. 158

Kent Machine Co., Cuyahoga Falls, O., recently has introduced a new multiple-spindle drill which can be adapted not only to the drilling of

several pieces during one cycle of the machine but also, by the use of a cluster drill head attached to the machine, to the drilling of several holes in each piece. The driller is manufactured with six single spindles on 7½-inch centers. Production of the machine is governed by the revolution of the camshaft which is controlled through a series of change gears and adjustable dogs. By this combination it is possible to synchronize the speed of production with the ability of the operator to feed the parts to be drilled to the fixtures. Feed of the drill per revolution is controlled by a feed cam.

Twelve fixtures are required, as shown in the accompanying illustration, two being used in connection with each drilling head. These fixtures occupy positions alternately in front of and between the drill heads. When in line with the drill heads the fixtures are locked automatically, thereby securely holding the work for the drilling operations. In the alternate position the fixture is opened, allowing the operator to remove the previously drilled parts and load the fixtures for the next operation. Thus, while the drill table moves forward for the drilling operation, six fixtures are being filled by the operator while six other fixtures grip the parts being drilled.

Either motor or belt drive is furnished. When motor drive is used, the motor is located on a movable angle plate in the base and is adjusted quickly for change of speed.



No. 158—Multiple-spindle drill with 12 fixtures, two being used in connection with each drilling head

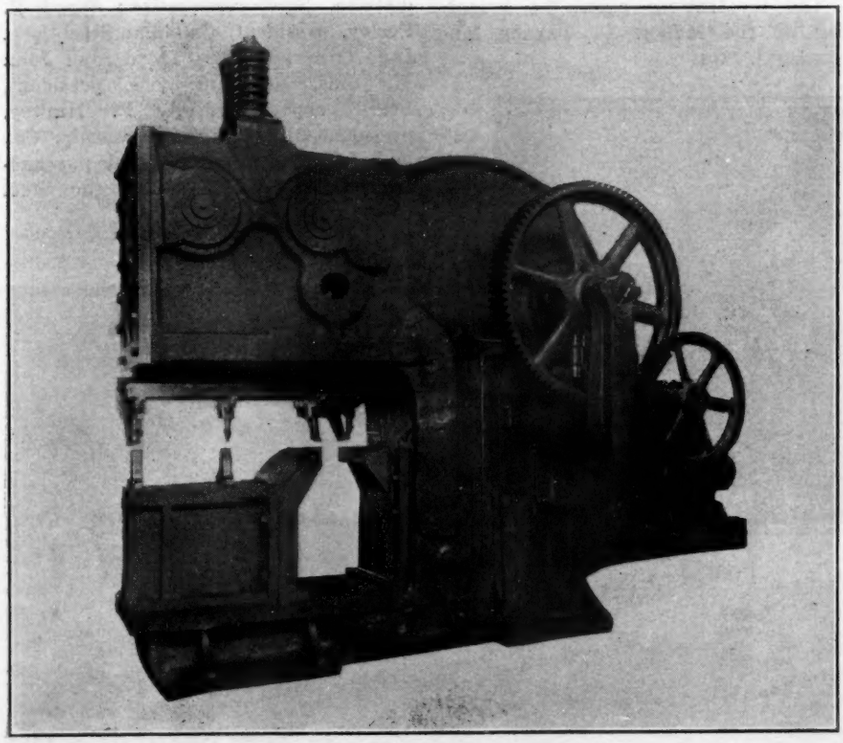
Toggle Presses Handle Large Sections

No. 159

Beatty Machine & Mfg. Co., 150th and Oak streets, Hammond, Ind., is manufacturing a new line of heavy-duty toggle presses for handling the larger sizes of structural steel sections. Punching of flanges and webs in one handling requires a large die space or length of head, front to back, and this feature has been embodied in the presses. To give added strength and rapidity to the head of the punch, the main body extending up in the housing has been lengthened to the same length as the face or space for tooling.

To distribute the pressure equally a double set of toggles is used to operate the head. These toggles are operated by a connecting rod leading to the main shaft which is mounted through the frame at right angles to the face of the head. The main shaft is fitted with an automatic stop clutch, controlled by an electric solenoid with remote push-button control. Driving gears are assembled on the housing, making a self-contained unit and saving on floor space. The punch is of all-steel construction with slide bearings bronze lined and all shaft bearings bronze bushed and fitted with single-shot force feed lubrication system.

The punch shown in the accompanying illustration is the 400-ton type and will punch four 1⅛-inch holes through 1-inch material in cluster at any point of the head, front to back. The use of the toggle to operate the head reduces the size of driving gears and hosepower of the driving motor considerably. Several sizes will be built ranging in capacity from 150 to 600 tons.



No. 159—Toggle press of 400-ton capacity used for punching flanges and webs of large structural steel sections in one handling

In April Great Britain imported 553 chucks for machine tools, valued at $7298, from the United States.

Electric Furnace Used to Reclaim Valuable Alloy Steels from Scrap

APPROXIMATELY 70 tons of special steels are consumed daily in the River Rouge plant of the Ford Motor Co., in the maintenance or replacement of tools, dies, machine parts and the like. This material is almost entirely of complex alloy composition and is used for specific purposes. Of the total amount, an average of 50 tons is replaced daily from steel scrap—the expensive alloys being reclaimed and used again.

Alloys most commonly reclaimed are those steels containing chromium, nickel, vanadium, tungsten, cobalt and molybdenum. If these were disposed of as scrap steel instead of being salvaged, the loss would be large.

The work of reclaiming alloy steels goes on in the electric furnace department, which is located in a separate building near the blast furnaces and production foundries of the plant. Although no production work is handled here, from 70 to 80 tons of steel are poured every day.

Equipment consists of one 50-ton, two 10-ton, one 3-ton and 1-ton furnaces. The steel is produced in ingot form, ranging from ½ to 8 tons in weight. In addition to the parts named above, steel castings are made for slag pots, pouring dishes, locomotive frames and wheel centers, and many other castings of various kinds, some weighing as high as 12 tons when finished.

Other castings of a special nature for heat-resisting purposes and other needs are being produced in this department. Recently it was called upon to furnish a special 7½-ton ingot to make a crankshaft for a large hydraulic shear in the rolling mills. This was delivered 8 hours after the order was received and produced a satisfactory forging.

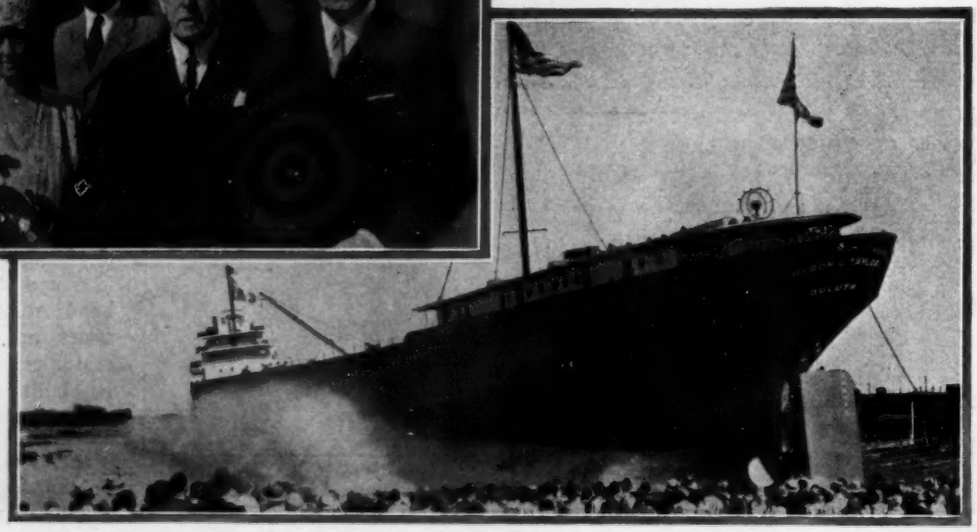
The electric process of steelmaking has superseded the crucible method in many localities. Reasons for this change include ease and accuracy of temperature control, and the fact that electricity is the cleanest of heating agents and has no deleterious effect upon the metal. The process also permits oxidizing, reducing or neutral operations to be carried on as desired.

Winton Engine Co. Cleveland, has let contracts for a three-story office and administration building, brick and steel, 45 x 70 feet.

U. S. Steel Launches 3 Steamers in Month

THREE steamers of the 600-foot class have been launched within a month for the Pittsburgh Steamship Co., subsidiary of the United States Steel Corp. The Pittsburgh fleet now has 72 steamers and 15 barges. The WILLIAM G. CLYDE, named for the president of the Carnegie Steel Co., was launched at the Lorain yard of the American Shipbuilding Co., June 22. The MYRON C. TAYLOR, named for the chairman of the Corporation's finance committee, was launched at the River Rouge yard of the Great Lakes Engineering Works, July 15, while the HORACE JOHNSON, named for the president of the Duluth & Iron Range railroad, was launched at the American company's Lorain yard July 20.

The illustrations show the launching of the MYRON C. TAYLOR, and part of the group that attended. Miss Beatrice Filbert, daughter of W. J. Filbert, comptroller of the Steel corporation, christened the vessel. Thence to the right in the front row are Mr. Filbert and Mrs. Filbert; James A. Farrell, president of the Steel corporation, and Mr. Taylor. Second row: C. L. Close, manager safety division, Steel corporation; Ward B. Perley, president, Canadian Steel Corp. Ltd., Ojibway, Ont. Third row: John M. Sias, assistant vice president, Steel corporation; A. F. Harvey, president, Pittsburgh Steamship Co., and John B. Carse, general purchasing agent, associated with the Steel corporation.



THE MYRON C. TAYLOR, *like the other boats of her class, is 604 feet long, and designed to carry 12,000 gross tons of iron ore on a 20-foot draft*

Editorials

Steel Merger a Matter of Time

REPORTS again are current that a merger of important steel producers in the Middle West impends. So frequently have these reports recurred in the past two years that the actual consumption would occasion little surprise. Events have been pointing to a fusion of so-called independents, but some accumulation of stock in the open market being a prerequisite, obviously there has been no formal announcement of plans.

A year ago March the Youngstown Sheet & Tube Co. and Inland Steel Co. marched up to the brink of a consolidation, only to go their separate ways for reasons never officially stated. In these two companies is a community of interest evidenced by stock ownership by what is termed the Eaton interest, which in turn has a relationship with the so-called Mather interest, both of Cleveland.

This community of interest also is apparent in the Republic Iron & Steel Co., Central Alloy Steel Corp., Otis Steel Co., Cliffs Iron Corp., and Bourne-Fuller Co. On paper the Corrigan, McKinney Steel Co. sometimes is included, but the internal setup of this company creates a problem. Overtures are reported to have been made to the Jones & Laughlin Steel Corp., and some believe that the president of this corporation will head up any merger the Eaton interest concludes. A northern Ohio sheet producer also has figured in merger talk.

In steel, as in other commodities, merging merely for size rarely is beneficial to shareholders. It is assumed that two essentials must be satisfied. There must be producing capacity in the Chicago district, and the fused companies must effect a complete cycle of finished steel products.

For the first condition laid down either Inland or Youngstown are essential, the former being more attractive on account of size. For the second, it is not difficult to ferret out the contributions the before-mentioned companies would make. It is noteworthy that such an independent merger would consolidate the stockholdings of the Eaton and Mather groups and facilitate their administration.

It may be two months or two years before some or all of these independents are combined, but in the steel industry the formation of a group approximating Bethlehem in size is taken for granted. In the meantime, each prospective component is endeavoring to strengthen its earnings position and thereby enhance its attractiveness and capacity for leadership of the new grouping.

Farm Board To Supply Leadership

REASSURING to industry is the fact that the new farm board is not composed of visionaries and theorists. Headed by Alexander Legge, who resigned the presidency of the International Harvester Co. at an annual salary of $100,000 to accept the $12,000 post offered him by President Hoover, the personnel throughout comprises practical men—industrialists and farmers who are familiar with farm problems. Their function as outlined by the President is to help create permanent and economic marketing business organizations controlled by the farmers; to establish opportunities in the country's economic system for the farmers; and to study how to adjust production to actual needs. The board is not to have a magic wand for revolutionizing the farming industry in a month or a year. It is to build on the foundation of initiative of the farmers themselves.

Industrial groups, particularly in the West, desire to see equal opportunity for the farmers in things economic. The well-being of the farmer contributes a vital share to prosperous business conditions in the agricultural regions. The farm relief act sets up a precedent in subsidy for any group.

While the new farm board should not be expected to assure success for incompetence on the farm, its personnel gives reasonable promise that the loose ends of the farming industry can be welded into a more efficient framework.

Combining Processes in Fabrication

MAN is a creature of habit and this fact is reflected in the product of his labor. For example, machinery has been built by a certain process because it was first made that way and no particular effort has been directed toward making it some other way. But according to present indications, the time has come when arguments of service and economy are

tempting designers to utilize a combination of processes.

In the article which appears on Page 199 of this issue of IRON TRADE REVIEW, the author points out how sound engineering practice is calling for the close linking of various methods, notably sheet metal work, casting and welding. One large manufacturer has used considerable ingenuity in developing a system whereby certain machine and equipment parts have been redesigned under the necessity of more rigid requirements and reduced costs, with surprising results.

For years many products have been made in the foundry, but with the introduction of welding there has been a tendency to divert a portion of this business to newer processes. However, it is shown that foundries may improve their position in this competitive market by studying design and by taking advantage of the opportunities afforded by simplified shapes and forms that have grown out of attempts to revamp designs in accordance with the requirements of processes for fabricating rolled steel. The obvious moral for foundrymen is to assume an open mind on competitive processes, and watch carefully for opportunities they can capitalize.

Gary Growth Is Logical

THREE main factors may be considered to to have led the United States Steel Corp., as represented by its subsidiary, the Illinois Steel Co., to plan extensive additions to capacity in the Chicago district. Three decades ago the corporation bough a sufficiently large tract on the southern tip of Lake Michigan to give it space for the ideal steel plant, something never before achieved in planning into the future.

Blueprints prepared before the site was graded or a building erected have served to guide the placing of additions through the 30 years since. Relations of furnaces and mills were worked out in advance for a distant future and now are being utilized. No crowding and backtracking is necessary. Spacious dimensions and straightline movement are retained.

Production costs at Gary, on the authority of Judge Gary, are lower than at any other plant. Assembly and conversion thus are economical. Heavy demands for steel in the Chicago territory have been impossible of fulfillment by existing production units, to a greater degree than has been the case at other centers. Since wartime excess capacity now is completely occupied and steel needs dictate an increase in capacity, Gary is the logical point at which to expand.

That the increase is to be equal to the total production of some important independents indicates the faith in future growth of the West on the part of corporation officials. Added capacity in the past has not equaled demand and tremendous western consumption dictates an increasing growth in the effort to keep pace.

Limiting Profits of Parts Makers

AMONG the automotive industry gossip retailed last week in "Mirrors of Motordom" was the practice of many automobile manufacturers in using earnings statements of parts makers as a lever for lower prices. Complete financial detail concerning parts makers is collected, and a good showing is just so much ammunition for the purchasing agent in driving a hard bargain.

It is a sign of the times. As the automotive industry acquires age and a background its profits tend to narrow and its purchasing officials are subjected to increasing pressure to cut down material costs. To use a good earnings statement as a club is perfectly legitimate. The new theory is that the seller is guilty of being able to submit lower prices until he proves himself innocent.

Beyond this cold, though valid, reasoning is a matter of equity. Is a parts maker to become a vassal of his outlets, permitted only a fixed return? If a manufacturer of gears, for example, develops equipment and shop practice enabling him to produce more cheaply, is he not entitled to maintain his price at approximately that of his competitors and pocket a reward for his ingenuity? Supposing his good earnings statement results partially from some other department of his business; must he surrender that profit on automotive business?

In other walks of life, earnings statements are not wholly the gage of price. When a housewife is quoted 11 cents for a large loaf of Jones bread she does not spring the latest annual report of the Jones company on her grocer and demand a 10-cent price. When a man buys a pair of shoes he does not go beyond the fact that the price is substantially what is generally asked for comparable quality.

Some day an extremely courageous parts salesman will be ushered into the purchasing department of a prosperous automobile manufacturer, produce that manufacturer's financial statement for the previous quarter and insist that on account of the abundant profits his contract price be increased. The salesman will never get another dollar's worth of business from that manufacturer, but the amazement he will have created will provide satisfaction for a lifetime.

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E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*

Chairman of the Steel Corporation's Finance Committee Attends a Launching. Page 206.

SINCE Jan. 1 capital expenditures announced for new plants, extensions and improvements in the iron and steel industry are estimated at more than $200,000,000—this during a period when leaders of the industry have urged caution against over-expansion. The leading article analyzes some of the reasons for the industry's apparent disregard of its own advice, and indicates how logical such expenditures are in view of the high operations and new developments, accelerating obsolescence. The annual cost of "wear and tear" and obsolescence in the industry is estimated at over $300,000,000.

The Readers' Page

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The Business Trend

Farm Outlook Brightens

By JOHN W. HILL, Financial Editor

TWO important developments during the last few weeks have had a far-reaching effect upon business sentiment. One has been the rather remarkable advance of agricultural prices, particularly wheat, and the other has been the greatly increased activity, with higher prices, for securities. The upward turn of wheat prices has banished recent fears that farmers' income would be seriously depleted this year.

IT IS significant that with the launching of the federal farm board with its plans for farm relief, aid of approximately $400,000,000 in the form of higher wheat prices has come to the farmers. Within the last month the outlook for the grain markets has changed from one of extreme pessimism to one of pronounced optimism. Since the end of May wheat has advanced 50 per cent.

THIS extraordinary reversal of trend has come as a result of revised crop estimates. Drought in the Northwest and in Canada is damaging the spring wheat crop, and the Canadian yield is expected to be relatively low.

THE crop has not been made as yet and authentic reports from other wheat growing countries remain to be compiled. Consequently, the final outcome of the year's harvest in this and other countries remains to be seen. As a result, sharp fluctuations for wheat are not unlikely, but the basis for the recent depressed state of mind seems definitely passed. Meanwhile, corn, oats, and rye are much higher.

BUSINESS confidence has found a new lease of life in the brightened aspect for agriculture. The stock market is also enhancing confidence generally because of its vigorous upward movement for many shares following the limpness of the spring. Share prices have reached new peaks.

STOCKS have been moving into higher ground as a result of a number of considerations. Less stringent money conditions have constituted a contributing factor. Greatly improved earnings on the part of many industries during the record-breaking first six months of 1929 are being reflected in stock quotations.

The Barometer of Business

INDUSTRIAL INDICATORS

	June	One month ago	One year ago	Average 1913
Pig iron output (Daily average tons,)	123,853	125,757	102,963	83,900
Machine tool index. 3-mos. moving average	315.2	329.5	214	.....
Unfilled orders (tons)	4,256,900	4,304,167	3,637,000	4,513,000
Ingot output (Daily average, tons)	195,255	195,302	144,000	.....
Dodge Bldg., awards in 37 states (sq. ft.)	72,797,000	80,656,000	94,381,000	.....
Automobile output	536,000	624,000	†440,000	.....
Coal output, tons	37,900,000	40,090,000	35,880,000	39,869,000
Business failures; number	1,767	1,897	1,947	1,336
Business failures; liabilities	$31,374,761	$41,215,865	$29,327,000	$22,732,000
Cement production, bbls.	16,775,000	16,151,000	17,469,000	7,704,000
Cotton consumption, bales	570,281	668,000	510,565	438,218
Car loadings (weekly average)	1,052,000	1,051,000	985,000	.....

FOREIGN TRADE

	June	One month ago	One year ago	Average 1913
Exports	$397,000,000	$387,000,000	$390,000,000	$194,000,000
Imports	$352,000,000	$401,000,000	$317,000,000	$149,900,000
Gold exports	$ 550,000	$ 467,000	$ 99,932,000	$ 5,234,000
Gold imports	$ 30,212,000	$ 24,097,000	$ 20,001,000	$ 5,900,000

FOREIGN EXCHANGE

	Normal	July 22	One month ago	One year ago
Sterling	$4.86	$4.84⅝	$4.84	$4.85⅝
Francs	19.3c	3.91c	3.90c	3.91c
Lira	5.26c	5.22c	5.23c	5.23c
Marks	23.8c	23.81½c	23.84c	23.8c

FINANCIAL INDICATORS

	June	One month ago	One year ago	1913
25 Industrial stocks*	$406.41	$365.94	†$251.31	$58.19
25 Rail stocks*	$150.85	$132.65	†$116.22	$82.90
40 Bonds*	$86.44	$86.86	$90.05	$93.00
Bank clearings (000 omitted)	$58,916,000	$56,913,000	$55,275,894	$13,895,000
Commercial paper rate (N. Y., per cent)	6	6	4¾	5.60
Commercial loans (000 omitted)**	$9,195,000	$9,140,000	$9,038,118	.....
Federal Reserve ratio, per cent	74	74	65	.....
Railroad earnings	†$103,000,000	$94,000,000	$88,179,000	$59,301,000
Stock sales, N. Y. stock exchange	69,546,040	91,283,000	63,886,110	6,924,000
Bond sales, par value	$233,656,750	$226,877,000	$256,974,700	$41,499,000

*July 23.

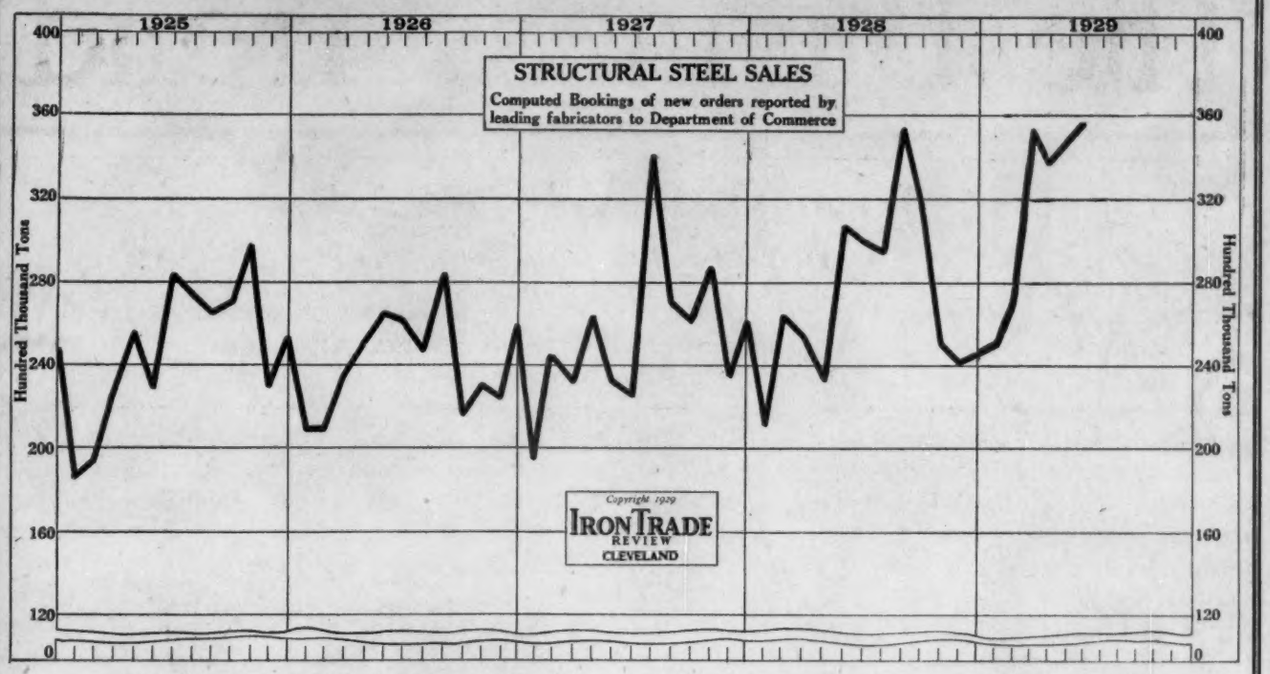
**Leading member banks Federal Reserve System.

†May, 1929.

COMMODITY PRICES

	July 1	One month ago	One year ago	1913
IRON TRADE REVIEW composite average of 14 iron and steel prices	$36.99	$37.10	$35.30	$26.32
Bradstreet's index	136.4	136	141.7	100
Wheat, cash (bushel)	$1.45	$1.08	$1.42	92c
Corn, cash (bushel)	$1.05	92c	$1.04	51c
Petroleum, crude (bbls.)	$1.36	$1.36	.....	.....

The Business Trend

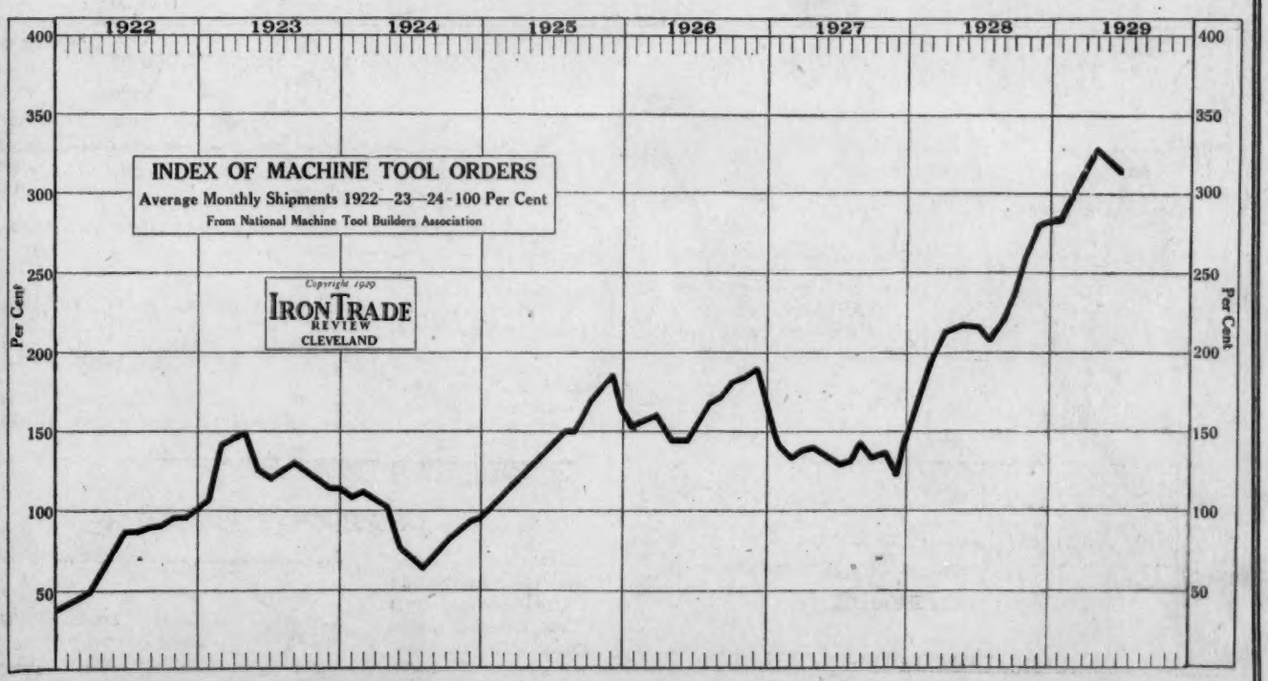


Structural Steel Sales

NEW orders for fabricated structural steel in June as reported to the department of commerce by leading manufacturers were 92 per cent of capacity. This compared with 90 per cent in May and 77 per cent one year ago. The computed tonnage for the industry during the month was 354,200, compared with 296,450 one year ago. For the first six months in the year the computed tonnage of new orders for structural steel amounted to 1,936,500, compared with 1,570,000 one year ago.

Machine Tool Orders

A SEASONAL slackening in the volume of orders for machine tools appeared in June. The decline accelerated slightly the downward turn of the three months' moving average, which was indicated in May for the first time since the summer of 1928. The three months' average, computed by the National Machine Tool Builders' association, stood at 315.2, compared with 329.5 one month before and 214 one year ago. The peak for the present movement was reached in April with an index of 330.



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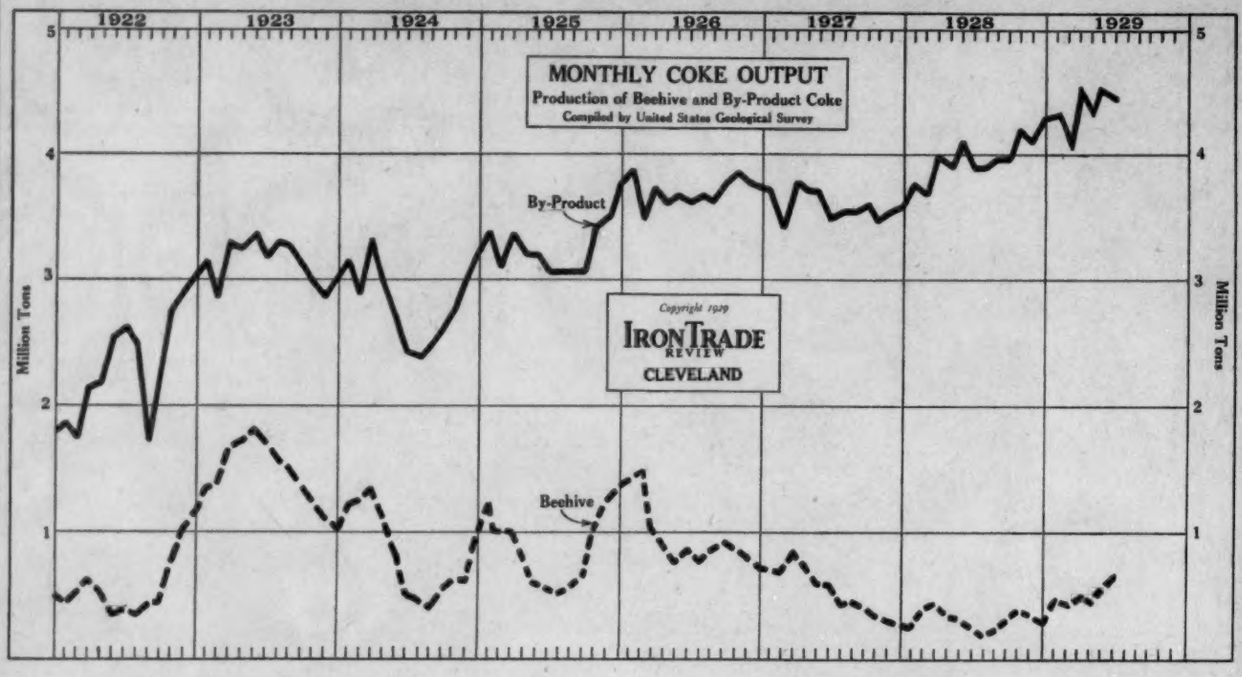
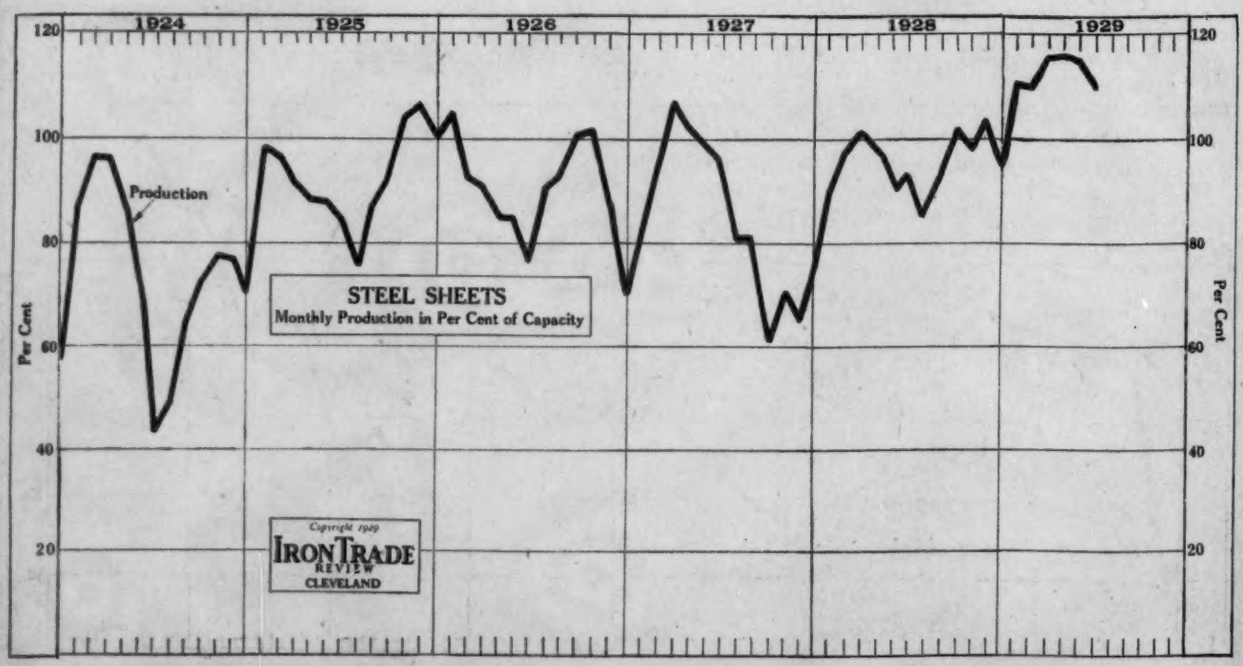


Coke Production

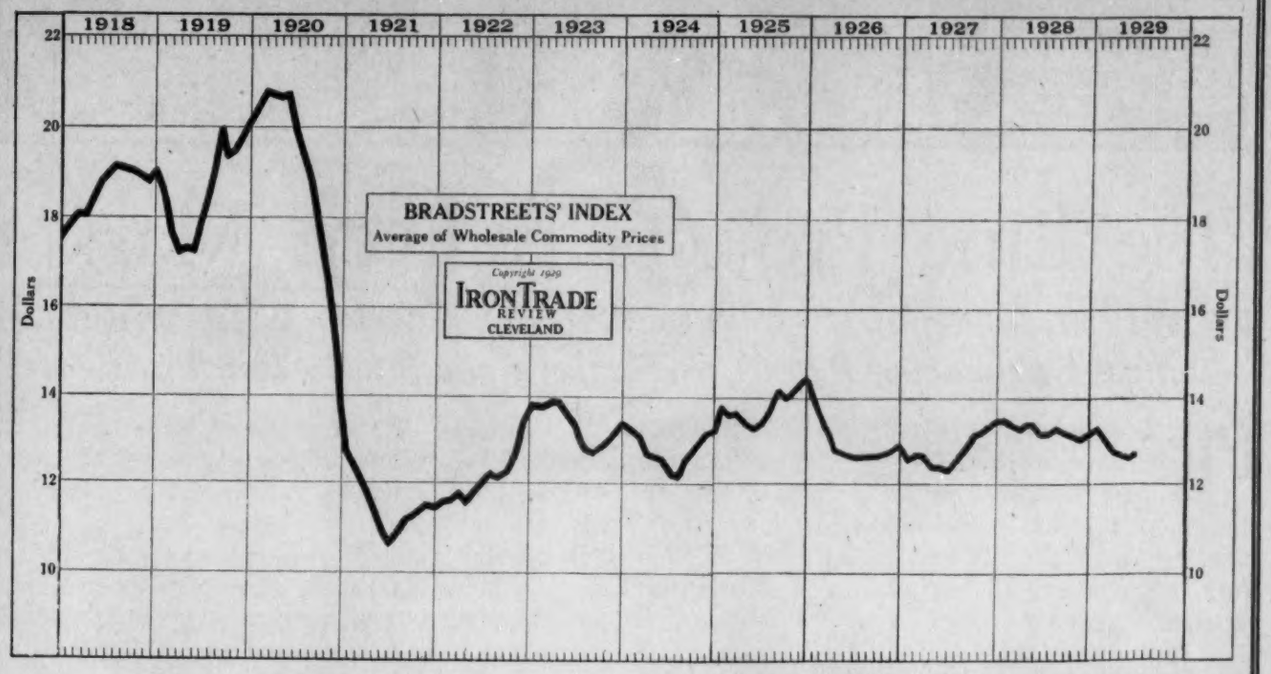
JUNE brought a pause in the upward movement of by-product production and an increase in beehive coke. Total output of beehive coke during the month was 721,500 tons, against 596,400 tons in May and 300,600 tons in June, 1928. By-product coke production in June was 4,509,564 tons, compared with 4,664,242 tons in May and 3,961,268 tons in June, 1928. Most of the increase in beehive output came from furnace ovens in the Connellsville regions. The gain over one year ago was 140 per cent.

Steel Sheets

JUNE brought a sharp increase in the volume of sales of steel sheets, although there was a seasonal decline for production and shipments. Production during the month as compiled by the National Association of Flat Rolled Steel Manufacturers was 110.4 per cent of capacity, compared with 115.8 per cent in May. Sales of sheets during the month represented 100.6 per cent of capacity compared with 82.4 per cent the preceding month. Unfilled orders on hand represented 221.1 per cent of capacity.



The Business Trend

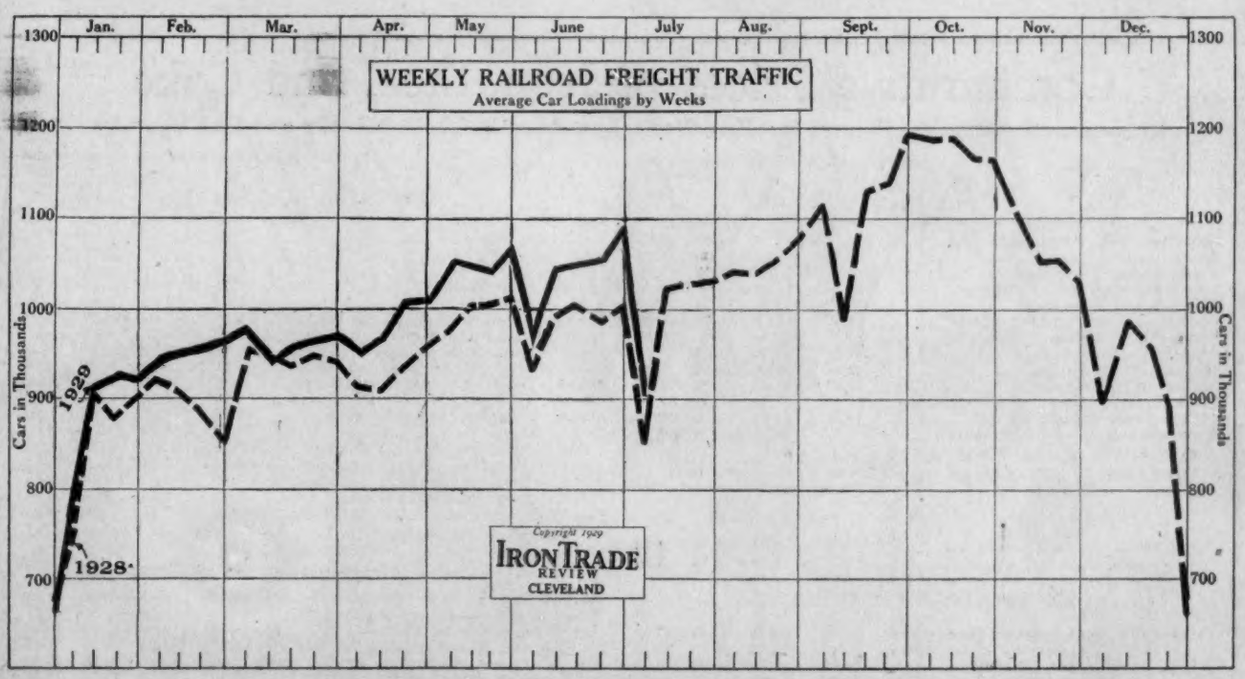


Bradstreet's Index

AFTER three consecutive monthly declines Bradstreet's price index turned upward July 1. The net change, however, was a slight one owing to the fact that important groups, such as provisions and textiles, declined. Farm products prices increased sharply. The index as of July 1 showed an increase of less than 1 per cent over one month ago. However, it was 3.7 per cent below January and 5 per cent below one year ago. Compared with the peak of all time in 1920, the drop is 40 per cent.

Weekly Freight Traffic

DURING the first half of 1929 railroads of the country loaded 25,596,938 cars with revenue freight. This exceeded the corresponding figure of last year by 1,135,165 cars, or about 4 per cent. The total for the first half of the year established a new high record for all time, exceeding the previous high mark in 1926. According to forecasts of probable needs of cars by shippers during the first quarter of the year, continued high records are expected to be made during the year.



Pipe Line Projects Enliven Market

400,000 Tons on Inquiry, 190,000 Tons Placed, for Middle West—Structurals Active—Steelmaking Rates Up—Southern and Silvery Iron Prices Cut

PIPE is supplying one of its periodic impulses to the steel market. Nearly 400,000 tons of steel will be required for a middle western pipe line, of record proportions, now being projected by the Henry L. Doherty interests, of New York. The Texas Co. is figuring a substantial tonnage.

Texas-Chicago Line Tonnage Record

For the gas line from Monroe, La., to Birmingham, Ala., 100,000 tons has been booked by the Republic Iron & Steel Co. Final details are being worked out on the line from Texas to Chicago, for which the A. O. Smith Corp. will provide approximately 190,000 tons. Sufficient lapweld business has developed recently to carry mills into October.

Large projects also dominate the structural market. Bids have been closed at New York on 13,200 tons for subways, making 30,000 tons of subway work pending . At Chicago 15,000 to 20,000 tons of structurals is being actively figured. Much bridge work, especially for railroads, is being closed quietly in the Middle West. Some interests believe over 1,000,000 tons of structural work will be placed in the last half year.

Meanwhile, steady requirements from miscellaneous buyers of steel bars, plates and sheets mount up to a good aggregate, maintaining production at a rate for midsummer which, prior to this year, would have been considered excellent for a spring or fall peak. What is said of sheets is apt also for most other steel lines—that all classes of consumers except two are as busy as a year ago, and these two, the automobile and car building industries, are much more active.

Scrap Prices Displaying Strength

Finished steel prices generally are strong, the occasion being infrequent when a producer needs to "buy" business. Some grades of sheets are highly competitive and nails are weak, but otherwise concessions are restricted to the usual tonnage consumers. Iron and steel scrap prices reveal much underlying strength, and for first

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 24, 1929	June 1929	April 1929	July 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.26	18.76
Basic, valley	18.50	18.50	18.00	15.95
Basic, eastern, del. eastern Pa.	19.90	20.25	20.25	19.00
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.86	18.26
No. 2 foundry, Chicago	20.00	20.00	20.00	17.60
*Southern No. 2, Birmingham	14.00	15.25	15.50	15.50
**No. 2X, Virginia furnace	20.00	20.00	20.75	20.50
**No. 2X, Eastern del. Philadelphia	22.26	22.76	22.26	20.76
Malleable, valley	19.00	19.00	18.50	17.00
Malleable, Chicago	20.00	20.00	20.00	17.60
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.26	18.76
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.75	2.75	2.75	2.60
Connellsville, foundry, ovens	3.75	3.75	3.75	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	35.75	35.00	33.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.75	35.25	32.25
Billets, open-hearth, Pittsburgh	35.00	35.75	34.50	32.25
Wire rods, Pittsburgh	42.00	42.00	42.00	42.00

	July 24, 1929	June 1929	April 1929	July 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.95	1.95	1.95	1.85
Steel bars, Chicago	2.05	2.05	2.05	2.00
Steel bars, Philadelphia	2.27	2.27	2.27	2.17
Iron bars, Chicago	2.05	2.05	2.05	2.00
Shapes, Pittsburgh	1.95	1.95	1.95	1.85
Shapes, Philadelphia	2.06	2.06	2.06	2.01
Shapes, Chicago	2.05	2.05	2.05	2.00
Tank plates, Pittsburgh	1.95	1.95	1.95	1.85
Tank plates, Philadelphia	2.15	2.15	2.15	2.10
Tank plates, Chicago	2.05	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.85	2.95	2.90	2.65
*Sheets, blue anl., No. 13, Pittsburgh	2.35	2.35	2.15	2.00
Sheets, gal., No. 24, Pittsburgh	3.60	3.65	3.65	3.50
Sheets, black, No. 24, Chicago	3.10	3.10	3.10	2.80
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.35	2.15
Sheets, galvanized, No. 24, Chicago	3.85	3.85	3.85	3.65
**Plain wire, Pittsburgh	2.50	2.50	2.50	2.45
**Wire nails, Pittsburgh	2.65	2.65	2.65	2.55
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.25

*Comparisons for April, 1929, and July, 1928, are with old blue annealed base, No. 10. **To large jobbers.

SCRAP				
Heavy melting steel, Pittsburgh	18.75	18.30	18.60	14.10
Heavy melting steel, eastern Pa.	16.50	16.25	17.00	12.75
Heavy melting steel, Chicago	14.75	14.95	15.95	12.30
No. 1 wrought, eastern Pa.	16.25	16.25	16.25	15.25
No. 1 wrought, Chicago	14.85	15.40	16.65	12.30
Rails for rolling, Chicago	17.50	17.50	17.50	14.50

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND

STEEL PLATES

Pittsburgh, base	1.95c
Philadelphia, del.	2.15c to 2.25c
New York, del.	2.225c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.01c to 2.11c
New York, del.	2.195c to 2.245c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c to 2.24c

BARS

SOFT STEEL

Pittsburgh, base	1.95c
Chicago, base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Lackawanna, N. Y., base	2.05c to 2.15c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c to 1.95c
Cleveland, del., outside mills	1.95c
Philadelphia, del.	2.27c to 2.32c
New York, delivered	2.29c to 2.34c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.19c to 2.24c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.05c to 2.15c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.30c
Stock lengths from mill	2.05c
Chicago, billet	2.40c to 2.90c
Chicago, rail steel	1.95c to 2.05c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.57c to 2.62c

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.85c to 2.95c
Philadelphia, delivered	3.17c to 3.27c
Gary, Indiana Harbor	3.05c
Chicago, delivered	3.10c
Birmingham, base	3.10c
St. Louis, del.	3.27c

TIN MILL BLACK, NO. 28

Pittsburgh, base	3.00c
Gary, base	3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.50c to 3.60c
Philadelphia, delivered	3.82c to 4.02c
Gary, Indiana Harbor	3.80c
Chicago, delivered	3.85c
Birmingham, base	3.85c
St. Louis, del.	4.02c

BLUE ANNEALED

Sheets, No. 13

Pittsburgh, base	2.35c
Chicago district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.52c
St. Louis, delivered	2.52c
Birmingham	2.35c

AUTOMOMILE, NO. 20

Pittsburgh, base	4.10c
Detroit, delivered	4.39c

FURNITURE

Pittsburgh	4.20c

(*Turn to the following page*)

grade material there is a large market and an attractive price.

Northern pig iron prices thus far are immune to the competition of southern iron, offered as low as $13.50, Birmingham. It is evident that some northern melters have been deferring purchases in expectation of benefiting from the southern invasion. Jackson county silvery iron makers are reported to have reduced prices $1 per ton. Basic iron is weaker in eastern Pennsylvania.

Pig iron sales have been higher the past week, due largely to the closing of some last half-year business. Bookings at Cleveland totaled 20,000 tons, a figure which describes inquiry at Buffalo. New York sellers closed on 10,000 tons and are figuring on 12,000 tons. A sanitary ware manufacturer which recently bought 15,000 tons of southern iron for its plant at Louisville, Ky., is to cover for its Pittsburgh plant. Large sales of basic iron are reported at Pittsburgh and in eastern Pennsylvania.

Bar Orders Hold Pace of June

In addition to the before-mentioned pipe business, plate mills are receiving a steady flow of specifications for storage tanks, car repairs and from carbuilders. American Locomotive Co. has placed 7500 tons of plates for 150 New York Central locomotives. Plate deliveries are defered up to eight weeks at both Pittsburgh and Chicago. Less stress is evident in soft steel bar deliveries, which are slowly improving despite unprecedented summer demand. Automotive requirements are lower at Chicago, and specifications for fall runs of implement makers will not hit their stride until late August. At Pittsburgh and Cleveland incoming bar business approximates July to the same date, an unusually good situation.

Sheet Mill Rates Taper Slowly

The vitality of sheet production, now 95 per cent in the Pittsburgh district, is remarkable. Bookings are ebbing slowly, and hot weather is a handicap, but backlogs insure a record July and probably August as well. June sales of independent mills averaged 10,264 tons daily, compared with 9025 tons in May, while June daily average production at 11,261 tons was slightly below the May figure of 12,691 tons.

Rail mills are tending toward lower schedules, as secondary buying fails to neutralize shipments.

Reversing the usual late-July trend, Steel corporation subsidiaries are increasing their operations. This week they are at better than rated capacity, compared with 99 per cent last week and 75 per cent a year ago. Independent producers hold at 91 per cent, with the industry slightly improved at 95½ per cent. Steelworks operations at Pittsburgh average 95 per cent, at Chicago 95 to 98 and at Birmingham above 90.

Weakness in southern and eastern pig iron again has lowered the IRON TRADE REVIEW composite of 14 iron and steel products. This index is off 4 cents, to $36.68. In June it was $36.99, and last July $34.91.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets Tin Plate, Wire Nails and Black Pipe

This week (July 24, 1929)	$36.68
Last week (July 17, 1929)	36.72
One month ago (June, 1929)	36.99
Three months ago (April, 1929)	36.81
One year ago (July, 1928)	34.91
Ten years ago (July, 1919)	47.86
Fifteen years ago (July, 1914)	22.17

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6¼ to 24-in., Pitts.	1.90c
Hot strip, bands 6 in. and under, Chicago	2.10c to 2.30c
Do, 6¼ to 24 in.	2.00c to 2.10c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c to 2.85c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Cold finished steel bars drawn or rolled, Pitts., Chi., c.l.	2.30c
Do, del. Detroit	2.575c
Shafting (turned, polished) Pittsburgh	2.30c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.65c to 3.10c
Cold finished steel bars, Cleve.	2.35c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per Pound)	Dealer trade	Large jobbers
Bright plain wire, 6 to 9 gage	2.60c	2.50c
Annealed field wire	2.75c	2.65c
Galvanized wire	3.20c	3.10c
Barbed wire, galvanized	3.40c	3.30c
(Per 100-pound keg)		
Wire nails	$2.75	$2.65
Galvanized nails	4.75	4.65
Polished staples	3.20	3.10
Galvanized staples	3.45	3.35
Cement coated nails	2.75	2.65
Manuf. wire, del. Detroit		
Wire nails, del. Detroit	$2.785 to	$2.885

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher, Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN PILING

Cut nails, l.c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Chain, 1-in., proof coil, Pitts.	6.00c
Sheet piling, base, Pittsburgh	2.25c

CAST IRON WATER PIPE

Prices per net ton
Class B pipe

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	37.50 to 38.50
Four-inch, New York	40.00 to 41.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 26.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mill	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Lag Screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off
Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.	
Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	5 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts-Cleve.	3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per Gross Ton
BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Cleveland	35.00
Philadelphia	40.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00 to 41.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	37.00

SLABS

Pitts., Young.	$35.00
Cleveland	35.00

WIRE RODS

Pittsburgh, Cleveland	$42.00
Chicago	43.00

SKELP

All grades, Pittsburgh	1.90c to 1.95c

IRON ORE

LAKE SUPERIOR ORE
Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	8.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN ORE
Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	11.00 to 11.50
North African low phosphorus	12.00 to 12.50
Swedish foundry or basic, 65%, nominal at	9.00 to 10.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten early fut., short ton unit, duty paid	15.75 to 16.00

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	34 to 36 cents
Indian	34 to 36 cents
Caucasion, (53-55 per cent)	36 cents

FLOURSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east. tide., gross ton	$20.15

REFRACTORIES

FIRE CLAY BRICK
Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK
Pet Net Ton

9 x 4½ x 2½	65.00

MAGNESITE
Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK
Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Market Continues Fairly Active—Southern Iron Sold for $13.50, Base, in Chicago Territory—Additional Basic Tonnages Booked

SALES of pig iron generally are above the average for July. Cleveland furnace interests booked 20,000 tons in the past week. The market in the eastern districts shows increasing activity. Buffalo reports inquiries from eastern melters totaling 20,000 tons. Two radiator companies are negotiating for a total of 8000 tons. A Pittsburgh district steelmaker placed a round tonnage of basic. Standard Sanitary Mfg. Co. is expected in the market for a tonnage for its Pittsburgh plant, following purchase of 15,000 tons of southern iron for Louisville. Chicago reports sales of southern iron at the equivalent of $13.50, base, Birmingham, the lowest price since 1915. Eastern furnace interests have protested against proposed freight rate reductions from Birmingham.

PITTSBURGH, July 23.—Little change is noted in the rate of pig iron shipments or the volume of new business. Purchases of several hundred tons at a time are fairly numerous, with a sprinkling of carload orders. Westinghouse Electric & Mfg. Co. closed with several interests for its requirements at Trafford City, Pa., the total amount estimated at 1500 tons. A nearby steelmaker placed a tonnage of basic with its regular source of supply. Standard Sanitary Mfg. Co., which closed recently for 15,000 tons of southern iron for its Louisville plant, is expected in the market soon for requirements at its Pittsburgh plant. Stocks at practically all furnaces are low, and some analyses are practically depleted. This is accentuated by the blowing out of the Claire furnace at Sharpsville for repairs. The Cherry Valley stack at Leetonia is expected to be in blast by the end of July. Prices are holding to former levels, with quotations on some grades still lacking a test.

Boston, July 23.—Pig iron sales in the past week, amounting to 8500 to 10,000 tons, were the largest in many weeks. A western Massachusetts valve manufacturer placed 2000 tons, a textile machinery builder ordered 2000 tons, and a Connecticut foundry took 1000 tons. Prices are steady. It is reported some of the tonnage was placed with Buffalo interests at $17, furnace, for No. 1 iron and $17.50 for No. 2X iron.

Toronto, Ont., July 23.—A stronger demand for merchant pig iron featured the Canadian market during the week. The majority of sales were in small lots. Total was close to 2000 tons. Shipments are heavy. Prices are unchanged.

Buffalo, July 23.—Pig iron inquiry, mainly from the East, has reached a total close to 20,000 tons. Large consignments of iron went to seaboard by canal this week. Buffalo sellers claim $18, furnace, is the minimum they will quote on eastern inquiry for foundry with the usual differentials for high silicon grades and malleable.

New York, July 23.—Sales aggregating close to 10,000 tons give the pig iron market a livelier aspect. Inquiry is better and prices show greater strength. It is more difficult for buyers to shade $18, base, Buffalo. Including such lots as 4000 to 5000 tons for American Radiator Co., 3500 tons for National Radiator Co., and 1000 to 2000 tons of malleable for Eastern Malleable Iron Co., Naugatuck, Conn., 12,000 to 13,000 tons are pending. A consumer of foundry iron came into the market this week for 1000 tons for third quarter and closed the same day. A. P. Smith Mfg. Co., Plainfield, N. J., has closed on 600 tons of No. 2 plain and No. 2X foundry iron for last quarter.

Youngstown, O., July 23.—Pig iron sales are small, but the aggregate is fairly satisfactory. The price continues firm at $18.50, valley, for No. 2 foundry and basic. Reports are heard here of continued unsettlement in the southern pig iron market which resulted in the price of $14, base, Birmingham, being made recently on a large tonnage of southern iron going to a sanitary shop at Louisville, Ky.

Cleveland, July 23.—Pig iron sales booked by furnace interests at Cleveland increased to 20,000 tons in the past week, compared with 12,000 tons in the week preceding. The gain, however, was limited mainly to one seller, and the market in general does not show much improvement over recent weeks. The majority of tonnage buyers have covered for third quarter. One melter is inquiring for 2200 tons for third quarter and 2800 tons for fourth quarter. Some producers report a moderate improvement in shipments. Lake funace prices are steady. Cleveland producers continue to quote $18.50, base, for outside delivery, and $19 for local consumption. Some sales of basic iron are reported by valley makers at $18.50, valley.

Cincinnati, July 23.—Sales of pig iron declined the past week. One seller reports a total of 1300 tons; and another, 2000 tons. The Marmon Motor Co., Indianapolis, is inquiring for 2500 to 5000 tons of northern foundry iron, the amount depending on whether material is taken only for third quarter or for second half. A Muncie, Ind., consumer is asking for 600 tons of the same grade.

Chicago, July 23.—More pig iron buyers are feeling out the price preparatory to covering for third quarter, and in the meantime are taking shipments on a week-to-week basis. The price of $20, Chicago furnace, is holding for the base grades, and many smaller buyers, still uncovered for the quarter, have given up expectations of a change in the northern iron market. Fairly active spot buying is reported. Southern iron is being offered at prices figuring as low as $13.50, base.

(*Concluded on Page* 231)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts. dist. fur.	19.00
*Basic, del. Pittsburgh	19.63 to 20.13
Basic, Buffalo furnace	18.50
Basic, del. eastern Pa.	19.90 to 20.25
Malleable, valley furnace	19.00
Malleable, Pitts. dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa.	21.76 to 22.90
Malleable, Granite City fur.	20.50
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila.	22.76 to 23.26
No. 1X, Buffalo furnace	21.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts, dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	18.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City fur.	20.00
No. 2 plain, del., Phila.	21.76 to 22.26
No. 2 plain, Virginia furnace	19.50
No. 2 plain, Buffalo, del. Boston	22.41 to 22.91
No. 2 plain, N. J., tidewater	20.78 to 21.78
No. 2 Alabama, Bir. base	13.50 to 14.50
No. 2 Tenn., Birmingham base	14.00 to 14.50
No. 2 Tenn., del. Cincinnati	18.19 to 18.69
No. 2 Alabama, del., Cincinnati	17.69 to 18.19
No. 2 Alabama, del., Cleveland	20.51 to 21.01
No. 2 Alabama, del., Chicago	20.01 to 21.01
No. 2 Alabama, del. St. Louis	18.92
No. 2 Ala., Phila., dock dely.	19.75 to 21.01
No. 2 Ala., Balt., dock dely.	19.50 to 20.76
No 2 Ala., Boston, dock dely.	20.25 to 21.41
No. 2X, east, N. J., tidewater	21.28 to 22.28
No. 2X, eastern, del. Phila.	22.26 to 22.76
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	22.91 to 23.41
No. 2X, Virginia furnace	19.50 to 20.00
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$24.60
No. 1, foundry, del. Montreal	26.00
No. 2 foundry, del. Toronto	24.10
No. 2 foundry, del. Montreal	25.50
Malleable, del. Toronto	24.10
Malleable, del. Montreal	25.50
Basic, del. Montreal	24.50

Silvery iron, Jackson county, O., furnaces, in per cents: 5—$23 to $24; 7—$25 to $26; 8—$26 to $27; 9—$27 to $28; 10—$29 to $30; 11—$31 to $32; 12—$33 to $34; 13—$35 to $36.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$31 to $32; 11—$33 to $34; 12—$35 to $36; 13—$37 to $38; 15—$41.50 to $42.50; 16—$43 to $44.

Coke

Connellsville Production Increased Slightly — Foundry Shipments Are Slower

PRODUCTION of coke in the Connellsville district has picked up, following the recent curtailment, and while more surplus is available large accumulations are lacking. The spot market is dull, but shipments on contracts are steady. Prices are firm. Shipments of beehive and by-product foundry fuel are slower than in recent weeks, but prices generally are being reaffirmed.

Pittsburgh, July 23.—Little activity is noted in the market for beehive coke. The spot market is experiencing its usual summer dullness, but this is not reflected in prices which hold to $2.75 to $2.85 for the furnace grade. Occasional orders for a few hundred tons are received for extended shipment. The movement on old orders is steady, and production has increased following the recent letdown. More surplus coke is available, although producers are not permitting heavy accumulations. Foundry coke demand continues slow. Output by merchant ovens is the highest since the middle of June, but well below the peak noted earlier in the year.

Production of coke in the Connellsville district for the week ended July 13 was 101,840 tons, compared with 92,970 tons the preceding week, according to the *Connellsville Courier*. This compares with 29,660 tons a year ago.

Boston, July 23.—Coke prices continue firm. Foundries are taking a little more than at the start of the month.

New York, July 23.—Steadiness prevails in coke, beehive furnace being unchanged at $2.75 to $2.85, base, and foundry at $2.75 to $4.85. By-product foundry coke is holding at $9 to $9.40, delivered, Newark, N. J.

Cincinnati, July 23.—By-product foundry coke will continue unchanged during August. Sales have been light, and except for the sale of 5000 tons of New River coke to an Illinois consumer beehive also has been quiet. Specifications are larger than last month.

St. Louis, July 23.—Aside from a slight slackening in the rate of deliveries of metallurgical grades, the coke situation remains unchanged as contrasted with the close of June. Shipments so far this month, however, are considerably above the average of the corresponding periods during the past five years. Prices are steady.

Birmingham, Ala., July 23.—Independent producers are finding a steady market for foundry coke. The price continues $5, base, Birmingham.

Coke Prices

Prices per Net Ton	
Beehive Ovens	
Connellsville furnace	$2.75 to 2.85
Connellsville foundry	3.75 to 4.85
New River foundry	6.00 to 6.50
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.75
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit, ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Spot Demand Quiet—Contract Shipments at Heavy Rate

New York, July 23.—Contract shipments of ferromanganese are going forward steadily, with spot demand quiet. The market is unchanged at $105, duty paid, tidewater. Domestic spiegeleisen, 19 to 21 per cent manganese content, also is unchanged at $34, furnace, and English spiegeleisen 26 to 28 per cent, nominal at $36.50, duty paid, tidewater. Future supplies of Chinese tungsten ore are uncertain. Not much is offered for future shipment, despite the high price, about $16, a short ton unit, duty paid. Domestic ore is above this price and other foreign close to it. Special ferroalloys of other kinds are unchanged.

Pittsburgh, July 23.—Continued high activity is noted in the ferroalloys market. Shipments of practically all grades are well maintained at the June rate for ferromanganese and spiegeleisen this represents practically no decrease from the peak rate earlier in the year. There is little activity in the market outside of specifications against contracts. Ferrotungsten is stronger due to a higher market on imported tungsten ores. Ferrotungsten is $1.40 to $1.45, with the latter figure more representative of the market. Ferromanganese and spiegeleisen are firm at $109.79, delivered Pittsburgh, and $34, respectively. Spot sales are made occasionally to small consumers. Other grades are steady and unchanged.

"Sells" Telephone Change

Every opportunity to convey a merchandising message to customers and prospects is realized by Joseph T. Ryerson & Son Inc., Chicago, warehouse and machinery interests. A change in the telephone exchange and number of the Cleveland branch plant and office has been made the basis for a series of postcards. These bear views of different sections of the Cleveland warehouse, with the name and the new telephone number on the front, the address and new number on the stamp side. These are sent direct from the Chicago office to the friends, customers and prospects of the Cleveland branch. If the first card escapes the attention of the recipient, by the time the second or third is received the message is delivered.

Bolts, Nuts, Rivets

Specifications Lighter But Satisfactory for Season

NUT AND BOLT PRICES, PAGE 216

Pittsburgh, July 23.—Specifications for bolts, nuts and rivets continue slower than a month ago, with jobbers less active in buying. Several other large consuming lines have lightened their requirements for this month although total business is favorable for July. Operations have been reduced from last month holding at 65 to 70 per cent. Prices are firm at 60 to 70 off for bolts and nuts, and 3.10c, Pittsburgh, for large rivets.

Chicago, July 23.—Mill orders for bolts, nuts and rivets are showing a slight gain. The general volume is slightly ahead of last year. Sales of structural rivets are picking up slowly. Bolts and nuts are quoted at 60 to 70 off, and rivets, 7/16-inch and smaller, are 70 to 70 and 10 off.

A bulletin, No. 192, covering an investigation of heating rooms with direct steam radiators equipped with enclosures and shields has been issued by the engineering experiment station of the University of Illinois at Urbana. It is obtainable at 40 cents a copy.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.40 to 1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Quantity diff. apply on 100 tons and over.
*These prices contract, spot $5 higher.

Scrap

Strength Increasing as Consumer Needs Promise Growth—Some Prices Are Advanced

UNDERLYING strength of iron and steel scrap, which has been evident during the lull and decline of the summer, is asserting itself and some observers believe the bottom has been reached and an upturn is imminent. Some grades have strengthened and bargains are less easy to obtain.

Chicago, July 23.—Recent strength in the eastern and southern iron and steel scrap markets is having a remote effect on dealer sentiment in this district, but prices are unaffected. Growing factors of strength are appearing and some views are that the low point in the recent downward movement has been reached. Dealer coverage of short orders is brisk. Bookings are moderately heavy for immediate shipment in small lots, while future commitments are light. Scrap supplies released in the week just closed by railroads and metal-working lines has not exceeded the absorptive ability of the market. Much of the railroad tonnage offered has moved to other consuming points along the carriers' lines. Withdrawal of the Gary furnaces from the active market has been a weakening factor. Shipments to consumers are setting a new mark for July. Heavy melting steel remains at $14.75 to $15.25, with sales to a leading independent consumer at frequent intervals on the basis of $15.25. Bids for railroad melting steel average about that figure, delivered in the Chicago switching district. Sales of axle turn-

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 12.50
Boston, dealers	12.50 to 13.00
Boston, No. 2	10.00 to 10.50
Buffalo, No. 1	16.00 to 17.50
Buffalo, No. 2	14.50 to 14.75
Chicago	14.75 to 15.25
Cincinnati, deal.	14.00 to 14.25
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.00 to 14.50
Detroit, No. 1 deal.	14.00 to 14.50
Detroit, No. 2 deal.	11.50 to 12.00
East Pa., del. mill	16.50 to 17.00
N. Y., deal. R. R.	12.50 to 13.35
N. Y., deal. yd.	8.25 to 9.25
Pittsburgh, No. 1	18.50 to 19.00
St. Louis, No. 1	14.25 to 14.75
Valleys, No. 1	18.00 to 18.50

COMPRESSED SHEETS

Buffalo (dealers)	14.50 to 14.75
Chicago	13.00 to 13.50
Cleveland	15.00 to 15.50
Detroit, dealers	14.00 to 14.50
E. Pa. new mat.	15.00
Pittsburgh	18.25 to 18.50
Valleys	17.75 to 18.00

BUNDLED SHEETS

Buffalo	12.00 to 12.50
Cincinnati, deal.	11.25 to 11.75
Cleveland	12.50 to 13.00
Eastern Pa.	11.50
Pittsburgh	16.00 to 16.50
St. Louis	10.00 to 10.50

SHEET CLIPPINGS LOOSE

Chicago	8.75 to 9.25
Cincinnati	9.00 to 9.50
Detroit, dealers	9.00 to 9.50
St. Louis	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Boston	10.50 to 12.50
Buffalo	19.00 to 19.25
Chicago (3 feet)	17.50 to 18.00
Chicago, 2 ft. and under	18.00 to 18.50
Cincinnati, deal.	18.50 to 19.00
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	20.00 to 21.00
Pittsburgh, 2 ft. and under	20.50 to 21.50
St. Louis	17.00 to 17.50

STOVE PLATE

Birmingham	12.50 to 13.00
Boston consumers	11.00 to 11.50
Buffalo	12.75 to 13.25
Chicago, net	11.50 to 12.00
Cinn., deal., net	9.25 to 9.75
Detroit, net. deal.	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill	8.00 to 8.50
St. Louis	12.50 to 13.00

COUPLERS, SPRINGS

Buffalo	19.00 to 19.50
Chicago	16.50 to 17.00
Eastern Pa.	21.00 to 21.50
Pittsburgh	21.50 to 22.00
St. Louis	14.75 to 15.25

ANGLE BARS—STEEL

Chicago	16.50 to 17.00
St. Louis	14.25 to 14.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	19.50 to 20.00
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.50 to 23.00
Pitts., sheet bar crops	20.50 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	16.50 to 17.00
St. Louis	16.00 to 16.50

SHOVELING STEEL

Chicago	14.75 to 15.25
Cleveland	11.00 to 11.50
Detroit, dealers	9.00 to 9.50
St. Louis	14.00 to 14.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	11.25 to 12.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	16.00 to 16.50
Chicago, No. 1	14.85 to 15.40
Chicago, No. 2	14.75 to 15.25
Cinn., No. 2	13.25 to 13.75
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	18.50 to 19.00
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	13.50 to 14.00

SPECIFICATION PIPE

Boston	9.75 to 10.00
Eastern Pa.	15.00
New York, deal.	10.75

BUSHELING

Buffalo, No. 1	14.50 to 14.75
Chicago, No. 1	13.00 to 13.50
Cinn., No. 1 deal.	11.00 to 11.25
Cinn., No. 2	6.75 to 7.00
Cleveland, No. 1	13.50 to 14.00
Cleveland, No. 2	10.75 to 11.00
Detroit, No. 1 deal.	12.50 to 13.00
St. Louis, No. 1	10.00 to 10.50
Valleys, new No. 1	16.00 to 16.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston	6.60 to 7.10
Buffalo	7.25 to 7.75
Chicago	7.50 to 8.00
Cincinnati, deal.	8.50 to 9.00
Cleveland	9.25 to 9.75
Detroit	8.00 to 8.50
Eastern Pa.	11.50 to 12.00
New York, deal.	7.50
Pittsburgh	12.00 to 12.50
St. Louis	7.50 to 8.00
Valleys	11.00 to 11.25

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.25
Buffalo	11.50 to 12.00
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.00
New York, deal.	7.00 to 7.25
Pittsburgh	12.50 to 13.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	7.00 to 8.00
Boston chem.	10.00 to 10.25
Boston, dealers	6.50 to 6.60
Buffalo	11.50 to 12.00
Chicago	9.75 to 10.25
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.50
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	7.00 to 7.25
Pittsburgh	12.50 to 13.00
St. Louis	9.50 to 10.00

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	12.25 to 12.75
Chicago, net	11.50 to 12.00
Cincinnati	10.00 to 10.50
Eastern Pa.	12.00 to 12.50
New York, deal.	8.75 to 9.25
St. Louis	12.50 to 13.00

FORGE FLASHINGS

Boston dealers	10.25 to 10.75
Buffalo	13.75 to 14.25
Chicago	10.50 to 11.00
Cleve. over 10 in.	13.25 to 13.50
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	9.00 to 9.25
Chicago	18.00 to 18.50
Eastern Pa.	14.00

ARCH BARS AND TRANSOMS

Chicago, net	20.50 to 21.00
St. Louis	21.50 to 22.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	14.25 to 14.75
Chicago	12.50 to 13.00
Cleveland	12.50 to 13.00
Eastern Pa.	14.50 to 15.00
Pittsburgh	15.75 to 16.75
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston, ship point	18.00 to 19.00
Buffalo	19.50 to 20.00
Chicago	18.50 to 19.05
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.50 to 22.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	17.10 to 17.65
Eastern Pa.	19.00 to 20.00
New York, deal.	14.00 to 14.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	14.00 to 14.50
Buffalo, steel	19.00 to 19.25
Chicago, iron	13.50 to 14.00
Chi., rolled steel	18.50 to 19.00
Cincinnati	12.50 to 13.00
Eastern Pa. cast.	16.50 to 17.00
Eastern Pa., rolled	20.50 to 21.50
N. Y., iron, deal	12.00 to 12.50
Pittsburgh, iron	16.50 to 17.00
Pittsburgh, steel	21.50 to 22.00
St. Louis, iron	14.00 to 14.50
St. Louis, steel	17.00 to 17.50

No. 1 CAST SCRAP

Birmingham, cup.	13.00 to 14.00
Buffalo	15.75 to 16.00
Boston, textile	14.50 to 15.00
Chicago, mach.	16.25 to 16.80
Chicago, railroad	15.25 to 15.60
Chicago, agri.	14.65 to 15.20
Cincinnati, Mach. cupolas, gross	19.50 to 20.00
Cleveland, cupola	16.00 to 16.50
Detroit, net, deal.	12.00 to 13.00
East Pa., cupola	16.00 to 17.00
N. Y., cup., deal.	12.50 to 13.00
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San. Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	15.25 to 15.75
St. Louis, No. 1	14.50 to 15.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	12.75 to 13.25
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.00 to 9.50
Eastern Pa.	15.00
New York, deal.	10.50 to 11.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	18.00 to 18.50
Chicago, agri.	15.50 to 16.00
Chicago, railroad	16.50 to 17.00
Cinn., R. R., deal	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail.	17.50 to 18.00
Detroit auto deal.	15.00 to 15.25
St. Louis	14.75 to 15.25

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.00 to 14.00
Rails, scrap, Boston	12.50 to 13.00
Buffalo	16.50 to 17.00
Chicago	17.50 to 18.00
Eastern Pa.	17.00 to 17.50
New York	12.75 to 13.25
St. Louis	16.25 to 16.75

LOCOMOTIVE TIRES

Chicago, cut	18.50 to 19.00
St. Louis, No. 1	15.00 to 15.50

LOW PHOS. PUNCHINGS

Chicago	16.50 to 17.00
Pittsburgh	20.00 to 21.00

ings for electric furnace use have been made at $13, against a recent peak of $15.75.

Boston, July 23.—There is a decidedly firmer trend for scrap prices, though volume is limited. Steel axles, rails, rerollers, skeleton, forge flashings, textile cast and other lines are firmer. Tonnages, however, are limited in the matter of shipments, but at the same time piles are low and there is a scarcity of first class lines.

Philadelphia, July 23.—The market on No. 1 heavy melting steel generally is regarded as $16.50, delivered eastern Pennsylvania consuming plants. Week before last there was a sale of about 5000 tons of this grade at $17, delivered, but the price is not considered as reflecting the market. Dealers now would be willing to sell large tonnages at $16.50. In the absence of new buying, however, there is no real test on No. 1 heavy melting steel. Mills continue to receive heavy deliveries and dealers report billings during July heavier than at any time previous this year. The supply of scrap generally is free.

Buffalo, July 23.—Small lots of No. 1 heavy melting steel continue to command $17.25, with Bethlehem an inactive factor. Dealers offer $14.25 for No. 2 steel. A sale of No. 1 cast was made at a 25-cent advance over last week. A large inquiry for stove plate is noted.

Cleveland, July 23.—Iron and steel scrap continues quiet with prices firm and unchanged. The leading consumer holds rail shippers to occasional cars of blast furnace scrap. A second consumer is taking no material. The third is accepting strictly No. 1 heavy melting steel freely but is receiving little, due to its low offering price, about $16.17, delivered. Steel foundries are taking fair shipments of low phos scrap but are slackening off somewhat due to declining demand from automobile producers.

Cincinnati, July 23.—Dealers find it difficult to obtain good scrap to apply on contracts and as a result yard stocks are being depleted. Heavy melting steel and No. 2 railroad wrought are bringing 25 cents more than a week ago while bundled sheets are costing 50 cents more a ton.

St. Louis, July 23.—Iron and steel scrap is markedly stronger. Material is scarce and with consumer stocks decreasing rapidly some anxiety is being exhibited relative to future supplies.

Dealers are taking a firmer view and have marked up quotations. Among the items advanced are frogs, switches and guards, heavy melting and shoveling steel, rails, machine shop turnings and other steel specialties.

Birmingham, Ala., July 23.—No improvement is noted in iron and steel scrap and the market is lagging. Small lot purchases are being moved steadily but aggregate business being booked is of little consequence. Melters of heavy melting steel are buying against early needs and in other lines there is hand-to-mouth buying.

Toronto, Ont., July 23.—While the summer lull still is affecting business in iron and steel scrap, sales for the past week were better than for two or three weeks previous. Steel scrap showed some life with several good orders reported by local dealers. Steady small steel scrap orders are reported by Montreal dealers. Iron scrap continues the strong feature. Prices are unchanged.

New York, July 23.—Considering high mill operations, scrap shipments are light. As this condition has prevailed most of the month, although shipments are heavier than last year, dealers hope the next two or three weeks will see a spurt in consuming demand. Notwithstanding placing of a sizable tonnage by an eastern mill at a half dollar increase, dealers' buying prices on railroad steel are unchanged, as is the entire list.

Pittsburgh, July 23.—Iron and steel scrap still is strong in spite of small buying. Several grades are quotably higher on recent sales. Last sales of heavy melting steel were up 25 cents at $18.75 and $19. One sale at $18 does not call for all No. 1 steel. No sales of compressed sheets have been made above $18.50 but dealers have difficulty buying for less. Good scrap is scarce at any but high prices.

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

Semifinished Steel

More Material Available—Market Is Firm

SEMIFINISHED STEEL PRICES, PAGE 216

Pittsburgh, July 23.—With the exception of occasional small sales of rerolling billets there is little activity in third quarter coverage on this material, sheet bars and slabs. Forging billets are fairly active with $40 minimum well maintained. A number of large consumers of rerolling billets, slabs and sheet bars bought heavily during the second quarter and are in a fair position as regards supplies for several weeks. The tightness that existed during early months of the year practically has disappeared with the lower operations of some finishing mills. Many leading producers remain out of the market, however, and anticipate little available tonnage for open market until late this quarter. Rerolling billets, sheet bars and slabs generally are $35, with the $36 quotation of some producers nominal. Wire rods are firm and active at $42.

Youngstown, O., July 23.—Shipments of billets, sheet bars, and slabs are fairly satisfactory to producers, although the total so far this month has fallen behind the corresponding period in June. Prices of all three hold at $35, Pittsburgh and Youngstown. Wire rods continue active, and the price is firm at $42.

Chicago, July 23.—Several sales of billets are reported by producers in this territory on the basis of $37, base, Chicago. Detached finishing mills are buying semifinished material further into the future. More semifinished material is being bought from eastern mills than finished material. Sales of billets from eastern producers have been on the basis of $35, or lower, Pittsburgh. The base price of forging billets in the Chicago district is $42. Sheet bars are nominally $37.

Cleveland, July 23.—Specifications for sheet bars, billets and slabs have declined slightly. The leading local merchant producer continues operating at fully capacity, but schedules are three weeks ahead, instead of four or more weeks as reported some time ago. Few inquiries are appearing in the market. Prices are steady.

Philadelphia, July 23.—It is reported that an eastern mill in the past week bought a substantial tonnage of ingots from another eastern steelmaker.

June Auto Production Makes Record

Washington, July 23.—Although June production of automobiles in the United States and Canada shows a decline from May, it was the best June in the history of the automobile industry. In the United States 545,252 cars and trucks were made, while the Canadian output was 21,492 units, according to the department of commerce. Monthly comparisons follow:

	United States			Canada†
1928	Total	Passenger cars(1)	Trucks	Total
June	396,796	356,622	40,174	28,399
Total, 6 mo.	2,201,521	1,962,816	235,541	124,988
July	392,086	338,792	53,294	25,226
Aug.	461,298	400,593	60,705	31,245
Sept.	415,314	358,891	56,423	21,193
Oct.	397,284	340,146	57,138	18,536
Nov.	*257,140	217,454	*39,686	11,769
Dec.	*234,116	205,993	*28,123	9,425
Total, year	*4,358,759	3,827,849	*530,910	242,382
1929				
Jan.	401,036	347,382	51,590	21,501
Feb.	466,352	405,708	58,536	31,287
Mar.	*585,094	513,266	*69,749	40,621
April	*621,336	537,225	*82,425	41,901
May	*604,020	516,055	*86,647	31,559
June	545,252	452,641	91,296	21,492
Total, 6 mo.	3,223,090	2,772,277	440,243	188,361

*Revised. (1)Includes taxicabs. †Reported by dominion bureau of statistics.

Ampco Twist Drill Co., Jackson, Mich., has increased its capital from 50,000 to 200,000 no par value shares.

Bars

Heavier Buying Appears at Chicago—Deliveries Easier but Backlogs Remain Large

THOUGH buying of soft steel bars has been lighter during July and mills have reduced backlogs, signs are appearing of renewed buying to carry deliveries backward. Producers have not yet reached a point where immediate delivery can be made. Autumn rquirements cast their shadow ahead and indicate an upward movement in bookings. Prices are firm.

BAR PRICES, PAGE 215

Chicago, July 23.—Heavier sales feature the bar and other finished steel markets. Actual specifications this month are ahead of June and of the similar period in July, 1928. The delivery position of bar mill products is unchanged at seven to eight weeks, but outside material of desirable size and section now can be added even after rollings are scheduled. Thus delivery demands are under lighter stress, and less tonnage is going to eastern mills, except in plates. The effect of lessened automotive tonnage is noticeable. Farm implement specifications for autumn production are not expected to reach their stride until late next month.

Occasional sales of soft steel bars are reported on the basis of 2.05c, Chicago, when mixed carloads are involved. Incoming rail steel bar tonnage is light, but mills are kept operating at full turn on present backlogs. Republic Iron & Steel Co.'s rail steel bar mill at Moline, Ill., has resumed after a shutdown of several weeks for repairs. Rail steel bars to the manufacturing trade are quoted 1.95c, Chicago Heights.

Pittsburgh, July 23.—Incoming bar tonnage shows little change from the rate earlier this month although total business is below the June volume. Steady demand from diversified sources continues, although individual orders are small and generally represent immediate requirements. Bar mills still have fair backlogs on most sizes and demand for concrete reinforcing bars continues heavy. Shipments on average sizes are delayed two to three weeks. The market is firm at 1.95c, Pittsburgh.

New York, July 23.—Deliveries of about 30 days continue the rule on steel bars with demand brisk and the market holding at a firm minimum of 1.95c, Pittsburgh.

Philadelphia, July 23.—Specifications for steel bars continue good although appreciably decreased. While mills now can deliver fairly promptly prices are firm at 1.95c to 2.00c, Pittsburgh.

Cleveland, July 23.—Specifications for bars for new automobile models have arrested the downswing in demand and July orders to date largely parallel those of June. The volume is practically a record for midsummer. Bolt, nut and rivet requirements continue comparatively light. Forging shops are busy, and buying bars accordingly. Local mills quote 1.90c to 1.95c, Cleveland, outside mills 1.95c, delivered Cleveland, with 1.95c, Pittsburgh, the usual quotation in outside territory.

J & L Earnings High

Pittsburgh, July 23.—Jones & Laughlin Steel Corp. net income for the second quarter was $6,051,508 after depreciation and depletion of $1,652,734 and bond interest of $150,596. Surplus after preferred dividends on 1,027,515 shares and dividends on 1,296,720 common shares was $3,727,273. Six months net was $11,305,687 and $7,233,538 was passed to surplus.

Promotes Steel Flooring

Details of a system of steel plate flooring are contained in a four-page folder distributed by the American Institute of Steel Construction Inc., New York. The description with detailed drawings discusses a proposed method of fabricating flooring by welding steel plate to I-beams, and was prepared by Lee H. Miller, chief engineer of the institute. The folder comprises material which appeared with illustrations on Pages 1385-1388 of the May 23 issue of IRON TRADE REVIEW.

Kalman Steel Co. has moved its Buffalo office from 619 Stock Exchange building to 406 Crosby building.

Plates

Mills Continue with Heavy Backlogs, Despite High Rate of Operations

PLATE demand continues active. More than 15 per cent of steelworks tonnage in the Middle West during the past week was comprised of plates. Chicago district mills' backlogs extend from seven to eight weeks; Pittsburgh mills four to eight weeks, and eastern mills, six to eight weeks. Eastern orders larger, including 7500 tons for 150 locomotives for the New York Central.

PLATE PRICES, PAGE 215

Chicago, July 23.—More plate tonnage has been added to mill books, which already have backlogs of seven to eight weeks. A large portion of steelworks tonnage sold in the past week was in plates. The delivery position is unchanged, although less pressure is exerted from buyers. Emergency tonnage now is being taken in on current rollings, and it is possible to add 100 to 200 tons regularly to sizes and sections being rolled. About 3000 tons in fresh inquiry has appeared from the Southwest and coast oil districts. Car building specifications are moderately heavy. Orders for car material from a western railroad placed 2000 to 3000 tons of plates on mill books. Railroad orders comprise an important feature of the buying. The price is 2.05c, base, Chicago.

New York, July 23.—Larger tonnages are appearing in the plate market. The American Locomotive Co. distributed in the past week approximately 7500 tons of plates for 150 locomotives booked a few weeks ago for the New York Central. Approximately 1700 tons of 66 and 72-inch steel pipe has been placed for water work in Brooklyn and 600 tons for a penstock in Newfoundland. Tank work is featured by 2000 tons for the Sinclair Oil Co., at Wellsville, N. Y. Miscellaneous buying, while not on the scale of a month ago, is holding up surprisingly well. Deliveries continue four to six weeks, with prices steady at 1.95c to 2.05c, Pittsburgh, or 2.05c to 2.15c, Coatesville.

Philadelphia, July 23.—Shipyards here expect inquiries soon for two ships for the United States Lines.

Pittsburgh, July 23.—Plate mills continue with heavy backlogs, incoming business retaining most of its recent activity. Plate deliveries are extended four to eight weeks despite heavy operations. Specifications are best for freight car, line pipe and barge work. Several additional large pipe line projects are expected to be closed shortly and will take heavy plate tonnages. A fair volume of small-lot barge business pending.

Cleveland, July 23.—Single carload orders, with occasional 50, 75 or 100-ton lots are becoming slightly more numerous. Larger orders are due for placing in the immediate future, such as several hundred tons for a recent locomotive order, placed at Lima, O.

The 1.95c, Pittsburgh, level rules on small quantities. Nickel steel is being specified for boilers, etc., for locomotives wanted by Great Northern.

CONTRACTS PLACED

7500 tons, plates for 150 locomotives for New York Central, distributed by American Locomotive Co.

2800 tons, West Hartford, Conn., withdrawn, the work going to Lock Joint Pipe Co., and calling for concrete.

1700 tons, 66 and 72-inch pipe for tunnel work for the board of water supply, New York, for installation in Brooklyn, awarded through J. P. Welsh, general contractor.

600 tons, penstock for International Paper Co., Newfoundland, to Chicago Bridge & Iron Works.

250 tons, seven tanks for Southern Pacific Co., San Francisco, for installation in California and Nevada to Chicago Bridge & Iron Works.

200 tons, tank work, Shell Oil Co., Seattle, to various Seattle plants.

165 tons, two steel hull, whirler derrick boats for U. S. Engineers, Memphis district; to Dravo Contracting Co.

CONTRACTS PENDING

3700 tons, pipe line, Seattle. Bids received.

2000 tons, Sinclair Oil Co. tanks, Wellsville, N. Y.

510 tons, six dump scows for U. S. Engineers, Cincinnati district; Marietta Mfg. Co. low bidder.

Steel Castings Are Low

Washington, July 23.—Although bookings of commercial steel castings in June declined to the lowest of any month this year, they were higher than June, 1928. Comparison of the six month figures with the same period in 1928 shows a large increase, according to the department of commerce table, which follows:

	Bookings		Production	
1928	†Total net tons	Railway specialties	†Total net tons	Railway specialties
June	72,107	22,597	91,746	30,742
Total (6 mo.)	509,268	203,766	527,265	204,841
July	66,992	20,483	78,648	27,501
Aug.	81,286	25,171	87,742	27,157
Sept.	82,762	35,234	75,761	25,311
Oct.	78,860	26,736	87,952	29,471
Nov.	84,742	34,545	82,385	30,799
Dec.	96,373	43,928	82,203	26,484
Total	1,000,283	389,863	1,021,956	371,564
1929				
Jan.	124,313	64,809	93,413	35,689
Feb.	115,639	58,903	97,568	40,282
Mar.	130,836	60,743	115,163	49,562
April	144,616	75,625	121,941	53,458
May	*113,329	44,919	*127,189	58,636
June	94,559	35,425	115,411	55,493
Total (6 mo.)	723,292	340,424	670,685	293,120

*Revised.

†For tonnage of miscellaneous castings deduct Railway Specialties from the total.

Data sheets on the "Constitution of Nickel-Carbon Alloys" recently have been prepared for the nonferrous data sheet committee of the institute of metals division of the American Institute of Mining and Metallurgical Engineers and the recommended practice committee of the American Society for Steel Treating. The material was compiled by N. B. Pilling and T. E. Kihlgren, International Nickel Co., Bayonne, N. J.

Pipe

191,000-Ton Order Breaks Record—400,000 Tons Up in East—Cast Pipe Activity Is Fair

BELIEVED to be the largest single pipe order ever awarded, 191,000 tons for the Texas-Chicago line went to A. O. Smith Corp. A 100,000-ton lot went to Republic Iron & Steel Co. An inquiry for 400,000 tons is alive in New York. Other line pipe tonnage will make 1929 a record year. Small lots rule in cast pipe. Other classifications of pipe are fairly active.

PIPE PRICES, PAGE 216

Chicago, July 23.—Additional private buying of cast iron pipe has helped to maintain tonnage, but nothing new is occurring in advertised municipal work. Bids were received today on 1600 tons of 4 to 8-inch pipe for Chicago. Only small odd-lot sizes will be required for the Hinsdale and Peoria, Ill., sewage treatment works. A filtration plant at Poplar Bluffs, Mo., will take 150 tons. Carload prices are being maintained at $45.20 to $46.20, delivered Chicago, for the larger cast pipe sizes.

Boston, July 23.—Municipal pipe awards are lacking but private business holds up. Holyoke, Mass., inquiries for 1000 tons of 6 and 12-inch pipe, for estimating purposes. Boston Consolidaded Gas Co. will soon close on its requirements for the last quarter, involving 2000 tons of 6 to 24-inch. Massachusetts recently purchased 350 tons of pipe for various institutions. Prices remain firm.

New York, July 23.—Utility companies continue to make heavy demands for steel pipe. Henry L. Doherty & Co., this city, is figuring on close to 400,000 tons for installation in the Middlewest. Of this total fully 200,000 tons range 20 to 24 inches. The Texas Co. also is understood to be contemplating a substantial tonnage. Sellers of lapweld pipe report an unusually brisk demand so far this month. From a position of dullness late in June, the market became suddenly active and has continued so practically ever since. Some leading mills are now booked until October. On buttweld pipe the situation is relatively quiet, with deliveries available in a week or 10 days in most instances. The city is buying approximately 100,000 feet of 13⅜-inch lapweld pipe for the westside elevated roadway. A portion of that purchased was used pipe.

Cast pipe prices are mixed with business during the week light. Several pipemakers hold to around $37.50 New York, delivered, for class B 6-inch and over. Attractive tonnage brings out bids under this figure from other directions. Some small lots, however, move at the nominal market quotation. Inquiry is light. Another sewer project at the Rockland county hospital will take additional pipe. Pending subway work in New York will require about 150 tons of various sizes. The largest lot pending is that at Hartford, Conn., for 4500 tons of 36 to 42-inch, some of which will be cement-coated.

Pittsburgh, July 23.—The 950-mile pipe line project of the Central States Natural Gas Co. to be laid from Texas to Chicago involving 191,000 tons of steel has been awarded to A. O. Smith Corp., Milwaukee. This is the largest pipe tonnage ever awarded to an individual producer. A large tonnage also is pending for proposed lines into Pennsylvania, New York and New Jersey. Little change is noted in demand for other descriptions of pipe. Mechanical tubing has tapered somewhat with the decline in automotive operations although it is seasonally heavy. Locomotive and boiler tubing demand is well maintained. Merchant pipe business is steady although less active than a year ago. Some slowness is developing in demand from the oil country. Total wrought iron pipe business has improved slightly over the rates of June, 1929, and July, 1928. Mills are heavily engaged in production of larger sizes of lapwelded pipe, backlogs of which are expected to extend through August. Seamless operations hold at 65 to 75 per cent.

Cleveland, July 23.—Buttweld pipe demand is well sustained for the season indicating maintained building programs. Prompt deliveries can be secured so that jobbers only order small amounts each time. Lapweld backlogs are heavy but orders placed here are sparse, a gas company buying 200 to 300 tons occasionally.

Birmingham, Ala., July 23.—Production and shipments of cast iron pressure pipe show increases. American Cast Iron Pipe Co. broke a shop record on a day's production last week. Except for standard sizes always carried in stock, pipe is being moved as quickly as made. While base prices have not changed, concessions are reported since the reduction in iron prices.

Southern Natural Gas Corp. purchased 100,000 tons of steel pipe from Republic Iron & Steel Co. for the line from Monroe, La., gas fields to Alabama and Atlanta, Ga.

G. N. Knapp, geologist, and W. Briggs, of Montana, are drilling for oil in Lamar County, Alabama. They are down 825 feet, penetrating sands impregnated with gas.

Youngstown, O., July 23.—The Southwestern Gas Co. has awarded 200

miles of 6-inch electrically welded pipe, 8000 tons, to Republic Iron & Steel Co.

CONTRACTS PLACED

20,000 feet, 6 and 8-inch pipe for Royal Oak, Mich, awarded through contractor.
3200 feet, 24-inch pipe for West Allis, Wis., to United States Pipe & Foundry Co.
724 tons, 4 to 12-inch class B, improvement Lido Island, Newport Beach, Calif., to Underground Construction Co.
145 tons, 4 to 12-inch class B, improvement, Fifty-fifth street, San Diego, Calif., to Bert Noble.

STEEL PIPE

191,000 tons, Central States Natural Gas Co., for line from Texas to Chicago, to A. O. Smith Corp.
100,000 tons, pipe line for Southern Natural Gas Co., from Monroe, La., to Alabama and Atlanta, Ga., to Republic Iron & Steel Co.
8000 tons, 6-inch electrically welded pipe for Southwestern Gas Co. to Republic Iron & Steel Co.

CONTRACTS PENDING

400,000 tons, pipe line for insulation in Middlewest, including about 200,000 tons of 20 to 24 inches, being figured upon by H. L. Doherty & Co., New York.
20,000 feet 6 and 8-inch cast iron pipe mains and 11,000 feet of galvanized iron pipe lines with 150 service connections for city waterworks, West Greenville, S. C. Bids close July 30; Harwood Beebe Co., Spartanburg, S. C., engineer.
1600 tons 4 to 8-inch for Chicago. Bids received July 23.
1012 tons, 4 to 24-inch class B, Pasadena, Calif.; United States Pipe & Foundry Co. low on 6 to 24-inch and Pacific States Cast Iron Pipe Co. low on 4-inch.
360 tons, 8 and 18-inch class B, Alhambra, Calif. Bids opened.
185 tons, 4 to 12-inch class B, improvement of Broadway, Santa Monica, Calif. Bids opened.
150 tons, pipe for filtration plant, Poplar Bluffs, Mo.
145 tons, 4 and 6-inch class B, improvement Redwood street, San Diego, Calif. Bids Aug. 5.

Tin Plate

Pressure for Delivery Slackens—September Specifications Issued

TIN PLATE PRICES, PAGE 216

Pittsburgh, July 23.—Specifications for September delivery of tin plate are seasonably heavy although the ususual decrease from the spring and early summer rate is noted. Production of cans for packing of vegetables is nearly completed by September. General line can demand, however, continues heavy with the result that total business compares favorably with preceding years. Occasional orders are received for prompt shipment, although backlogs are not extensive and heavy pressure for delivery is lacking. Operations are well maintained, and at close to 95 per cent are more active than a year ago.

New York, July 23.—While tin plate mills generally are operating full time they do not have comfortable backlogs as usual at this season. Adverse conditions in the canning industry, particularly on the Pacific coast, have caused specifications to slow up.

Sheets

New Business Slightly Behind June Volume—Large Backlogs Sustaining Operations

THE weekly volume of sheet business is diminishing gradually from the June rate, but mills have backlogs sufficient to sustain present operations into August and September. At Chicago tonnage is piling up as a result of larger orders and lower production due to hot weather. Some specifications are coming out for new automobile models. Galvanized demand is stronger.

SHEET PRICES, PAGE 215

Pittsburgh, July 23.—The sheet market has lost little of the activity that has marked recent months. Incoming business so far in July is only slightly below the June rate, and despite heavy operations unfilled orders will sustain current production into September on most descriptions of sheets. Output has been aided recently by cool weather and an easier situation in steel supplies. The current rate is better than 95 per cent. All large sheet consuming lines are running at least as good as a year ago, with automobile and freight car builders showing substantial gains. Demand for automobile sheets is well sustained, with possibilities of an upturn developing next month for some interests. Weakening in sheet prices is no more pronounced than formerly. Galvanized sheets generally are 3.60c, sheet mill black is 2.85c to large users, blue annealed and automobile material are fairly firm at 2.35c and 4.10c respectively.

Youngstown, O., July 23.—New business continues to flow into sheet mills each day, but the weekly total is slightly under the preceding week. All mills have sufficient business to keep them operating four or five weeks, and all of them expect additional business will insure continued operation well into August at today's general rate. This is particularly true of the autobody sheet makers. Significant is the growing volume of specifications for several new models. These are expected to take up the slack that has recently appeared in automotive demand. Small lots of common black sheets bring 2.95c or a minimum of 2.85c, with large tonnage buyers still able to cover at 2.75c, Pittsburgh. The galvanized sheet market continues unsatisfactory and local producers are not interested in any price under 3.65c.

Cleveland, July 23.—Some sheet mills are catching up on deliveries, while others are filled up for six to eight weeks. One maker of hood and fender stock quoted Oct. 5 delivery on an inquiry a short time ago and got the business. For the most part, however, demand is shrinking. The curtailment is most noticeable in the automotive industry. Prices on blue annealed and autobody sheets are firm and unchanged. Black and galvanized are easier.

Cincinnati, July 23.—New business for district sheet mills receded slightly last week. Increased interest in galvanized sheets for the southern roofing market is noted. Automobile builders have reduced their demands, but manufacturers of metal furniture, electrical devices and steel partitions have maintained specifications at a steady rate.

Chicago, July 23.—Sheet tonnage is piling up as a result of heavier orders and reduced production. Orders for galvanized sheets this month are nearly double the similar period last month, while July specifications are about two and one-half times shipments. Orders for black sheets are matching shipments. Blue annealed backlogs extend 13 to 15 weeks. While more sheets bars are available, production is being affected by hot weather. Operations are 80 to 85 per cent for the district. Concessions still are reported for galvanized sheets in the South, Southeast and Southwest. Chicago district mill prices are 3.05c for No. 24 black, 3.80c for No. 24 galvanized, and 2.45c for No. 13 blue annealed sheets. Blue annealed plates are 2.30c, base.

St. Louis, July 23.—Producers of sheets report satisfactory conditions in the trade. Blue annealed continue to lead in demand. Some betterment is noted in galvanized. Prices are unchanged.

New York, July 23.—Blue annealed sheet prices are strong and demand is active, with scarcity reported in the lighter gages. On No. 12-gage and lighter some sellers are sold ahead five to six weeks, while making deliveries of heavier gages in two to three weeks. The market for galvanized is 3.60c, base, Pittsburgh, and black sheets are 2.85c to 2.90c.

Philadelphia, July 23.—While sheet consumption continues heavy, schedules generally are slightly easier, and it is possible to get fairly early shipment. Galvanized sheets are easier at 3.50c to 3.70c, base, Pittsburgh, black sheets are 2.85c to 2.95c and blue annealed 2.20c to 2.35c, base, although occasional exceptions are made.

Fewer locomotives were in need of repair on Class I railroads July 1 than at any time since the railroads began compilation of these reports in 1920, the American Railway association announces. Locomotives in need of repair July 1 totaled 7453 or 13 per cent of the number on line.

Structural Shapes

Subways Take 30,000 Tons—Other Lettings 1000 to 4000 Tons Apiece—Pending Work Involves Appreciable Total—Prices Hold

SUBWAY work in the East looms up importantly with 13,200 tons about to be purchased and 15,000 tons or more in immediate prospect. Weekly aggregates of awards keep up fairly well but one structural steel producer estimates that between a million and a million and one-half tons are to be placed prior to Dec. 31. A 4000-ton telephone building was placed in New York, a 3000-ton office building was awarded in Boston. Other fair sized jobs let include a 1600-ton state bridge in New York, 1200 tons for Norfolk & Western bridges, 1100 tons for a station wing at Boston, 1000 tons for a university building at Rochester, N. Y., and a 1000-ton restaurant at Chicago. A plant at East Hartford, Conn., and an office building at Newark, N. J., require 6800 tons.

STRUCTURAL SHAPE PRICES, PAGE 215

New York, July 23.—Bids have been asked on 13,200 tons for a subway section in the Queens section, bringing the total of subway work pending to about 30,000 tons. An aircraft factory building at East Hartford, Conn., will require 3000 tons, while 3800 tons will be needed for an office building at Newark. Bridge projects also are numerous. McClintic-Marshall Co. was awarded 4000 tons for the new telephone building. Awards are heavy for this season, but new business constantly coming into the market keeps tonnage in sight at a high aggregate. Deliveries of shapes are reported somewhat easier. Mills are at capacity in most instances and prices remain firm. One large producer of steel structural material estimates that known projects pending, or tonnages to be placed before the end of the year total at least 1,200,000 tons.

Boston, July 23.—Awards in this section last week totaled nearly 4500 tons. The largest was the E. H. Rollins & Son office building here, going to McClintic-Marshall Co., taking 3000 tons. Three small jobs, going to New England Structural Co., aggregated 380 tons, which also was awarded 1100 tons for the west wing of North station, Boston & Maine railroad.

Philadelphia, July 23.—Structural shape demand continues well maintained and eastern mills continue to operate practically full with fair schedules. Consumers as a rule, are able to obtain prompt shipment. Prices continue at 1.95c to 2.05c, base, eastern mill.

Pittsburgh, July 23.—Awards of fabricated structural steel are less numerous. Only a few projects involve more than 100 tons at a time. Inquiry is fairly well maintained, however, and although a considerable volume of work has been closed of late a sizable tonnage is involved in work still pending. Fabricators are fairly well engaged but backlogs are not extensive. Specifications for plain material hold well to the June rate and are seasonally heavy. The market continues 1.90c to 1.95c, Pittsburgh.

Cleveland, July 23.—Structural awards are not numerous and the inquiry rate is much lower than in June, but specifications for shapes are sufficiently heavy to prevent mills from catching up on deliveries. Backlogs dictate delivery dates, usually four to six weeks deferred. The market quotation on small quantities is still 1.95c, Pittsburgh, with larger tonnages going for less on contracts. The 1100 tons required for the addition to the City hospital was divided between Wheeling Structural Steel Co. and National Iron & Wire Co. The 200 tons for Reliance Electric & Engineering Co. here, will be fabricated by Pittsburgh Bridge & Iron Works.

Chicago, July 23.—Orders from recent building awards and specifications for railroad shops and car building orders constituted heavy tonnage for structural mills during the week. From 15,000 to 20,000 tons of structural material for building is pending, a large part of which is active. Building orders closed in this territory in the week just ended were 3000 to 4000 tons. Railroad bridge and repair work remains an active feature of the structural market. Deliveries are five to six weeks, a slight improvement. Plain material prices are governed largely by the 2.05c, Chicago, quotation.

Birmingham, Ala., July 23.—All steel fabricating shops are busy and will be for some time. Fabricators are bidding on structural steel for the plate mills of the Gulf States Steel Co., contract for which is to be let within a few days.

CONTRACTS PLACED

5000 tons (previously reported as 4000 tons) building, New York Telephone Co. Fiftieth street, New York, to Hedden Iron Construction Co.

Awards Compared

	Tons
Awards this week	32,223
Awards last week	34,457
Awards two weeks ago	30,619
Awards this week in 1928	22,843
Average weekly awards, 1928	39,082
Average weekly awards, 1929	41,722
Average weekly awards, July	34,526
Total awards to date, 1928	1,154,132
Total awards to date, 1929	1,251,646

4000 tons, telephone building, Eighteenth street, New York, to McClintic-Marshall Co.

3000 tons, office building, E. H. Rollins & Son, Boston, to McClintic-Marshall Co.

1600 tons, state highway bridge, Batchellerville, N. Y., to Pittsburgh-Des Moines Steel Co.

1200 tons, bridges, Norfolk & Western railroad, to Virginia Bridge & Iron Co.

1100 tons, addition, City hospital, Cleveland; 600 tons to Wheeling Structural Steel Co. and 500 tons to National Iron & Wire Co.

1100 tons, west wing of North station, Boston & Maine railroad, Boston, to New England Structural Steel Co.

1000 tons, hotel at Montreal, to Canadian Vickers Ltd.

1000 tons, physical education building, University of Rochester, Rochester, N. Y., to McClintic-Marshall Co.

1000 tons, Henrici restaurant and office building, South Wabash avenue, Chicago, to unstated fabricator.

900 tons, school, No. 141, New York, to Harris Structural Steel Co.

875 tons, bridges, Norfolk & Western railroad, to Mt. Vernon Bridge Co.

800 tons, office building for Louisville & Nashville railroad, Louisville, Ky., to Louisville Bridge & Iron Co.

800 tons, building, West Town State bank, Chicago, to unstated fabricator.

700 tons, miscellaneous bridge work in Indiana, to Indiana Bridge Co.

630 tons, building, Great Northern Paper Co., Millinocket, Mo., to McGuire & Jones, Portland, Me.

620 tons, mill building, Minersville, Pa., to Bethlehem Construction Co.

600 tons, building for Eagle Picher Lead Co., at Galena, Kans., to Illinois Steel Bridge Co.

500 tons, addition, St. Joseph's Lead Co., Edwards, N. Y., to Kellogg Structural Steel Co.

500 tons, apartment, Seventy-ninth street, New York, to Paterson Bridge Co.

500 tons, apartment, Park avenue, New York, to Paterson Bridge Co.

450 tons, building, Woolworth Co., Eighth and Olive streets, St. Louis, to American Bridge Co.

450 tons, addition to inn, Bucksville, Pa., to McClintic-Marshall Co.

425 tons, two airplane hangars, North Beach, N. Y., to McClintic-Marshall Co.

400 tons, bridges in Ohio, Baltimore & Ohio railroad, to American Bridge Co.

360 tons, viaduct alterations, Pennsylvania railroad, Philadelphia, to Shoemaker Bridge Co.

350 tons, signal bridges, Baltimore & Ohio railroad, to McClintic-Marshall Co.

350 tons, two bridges, Detroit, for Michigan Central railroad; to American Bridge Co.

325 tons (also 50 tons galvanized corrugated roofing and siding) dirigible hangar, Goodyear Tire & Rubber Co., Gadsden, Ala., to Decatur Iron & Steel Co.

320 tons, power house, Utica, N. Y., to McCoy Iron Works.

316 tons, educational building, Purdue university, Lafayette, Ind., to Insley Mfg. Co.

300 tons, girder bridge, Erie railroad, Harding, O., to Rochester Bridge Co.

300 tons, building, Middletown Bank & Deposit Co., Middletown, O., to Dayton Structural Steel Co.

280 tons, Kirby memorial, Wilkes-Barre, Pa., to Bethlehem Fabricators Inc.

260 tons, school, Dobb's Ferry, N. Y., to Levine Iron Works.

250 tons, additions, Glancy Malleable Iron Corp., Waukesha, Wis., to Worden-Allen Co,

250 tons, highway bridges, Youngstown-Olcott highway, state of New York, to McClintic-Marshall Co.
225 tons, extension, generator plant, Du Pont Engineering Co., Belle, W. Va., to Virginia Bridge & Iron Co.
225 tons, garage, Philadelphia, to Shoemaker Bridge Co.
200 tons, apartment, Buchanan and Haight streets, San Francisco, to Golden Gate Iron Works.
200 tons, miscellaneous work in Indiana, including three schools, two greasing stations, and church addition, to Rochester Bridge Co.
200 tons, Woodrow Wilson school, Binghamton, N. Y., to McClintic-Marshall Co.
200 tons, building, Reliance Electric & Engineering Co., Cleveland, to Pittsburgh Bridge & Iron Works, through J. L. Hunting Co. general contractor.
200 tons, two highway bridges for state of West Virginia; to Pittsburgh-Des Moines Steel Co.
190 tons, plant addition, Goodman Mfg. Co., South Halsted street, Chicago, to Duffin Iron Co.
160 tons, school, Medford, Mass., to New England Structural Co.
150 tons, hangar, Goodyear-Zeppelin Co., Los Angeles, to McClintic-Marshall Co.
150 tons, bridge on Lido island, Newport Beach, Calif., to unstated interest.
150 tons, warehouse, Fleet street, Toronto, Ont., to Reid & Brown Structural Steel & Iron Works.
150 tons, packing plant, Macey street, Los Angeles, to Consolidated Steel Corp.
140 tons, apartment, Vallejo and Laguna streets, San Francisco, to Western Iron Works.
140 tons, high school, Marshall, Mich., to Rochester Bridge Co.
135 tons, International Paper Co., New York, for Deer Lake power house extension, Newfoundland, to Jones & Laughlin Steel Corp.
132 tons, building, Hardware Mutual Insurance Co., Stevens Point, Wis., to Duffin Iron Co.
130 tons, all-welded warehouse for steel storage, Lincoln Electric Co., Cleveland, to Austin Co.
126 tons, bridge over Tujunga wash, Los Angeles, to Virginia Bridge & Iron Co.
126 tons, bridge over Los Angeles river, Los Angeles, for Pacific Electric Co., to Virginia Bridge & Iron Co.
125 tons, factory, California Corrugated Culvert Co., Berkeley, Calif., to Pacific Coast Engineering Co.
120 tons, school, Brookline, Mas., to New England Structural Co.
120 tons, oil house, Chicago & North Western railroad, Chicago, to American Bridge Co.
118 tons, state highway bridge, New ork, Dunkirk, N. Y., to McClintic-Marshall Co.
100 tons, warehouse, East Slauson avenue, Los Angeles, to unstated company.
100 tons, shipping platform, Nash Motors Co., Kenosha, Wis., to Worden-Allen Co.
100 tons, Press office building, Worcester, Mass., to Eastern Bridge & Structural Co.
100 tons, gasoline still supports, South Braintree, Mass., to New England Structural Co.
100 tons, Soldue river bridge, Washington, to Isaacson Iron Works, through Puget Sound Bridge & Dredging Co., general contractor.
100 tons, bridge work in Wisconsin, to Continental Bridge Co.

CONTRACTS PENDING

13,200 tons, subway, section 5, route 108, Queens, N. Y. Bids asked by New York.
3800 tons, office building, American Insurance Co. Newark, N. J. Bids taken.
3000 tons, factory building, Pratt & Whitney Co., East Hartford, Conn.
3000 tons, Ridge avenue subway, Philadelphia; Keystone State Construction Co. is low bidder on general contract.
2500 tons (estimated) office building, Madison avenue and Fifty-second street, New York.
1900 tons, apartment, Park avenue near Tenth street, New York.
1600 tons, detention courts building, Sixth avenue, New York.
1250 tons, three schools, Nos. 71, 52 and 208, New York.
1000 tons, six bridges, Pennsylvania railroad in various locations.
1000 tons, New York state office building, Buffalo. Bids in.
850 tons, two schools, Queens, N. Y.; reported awarded to Harris Structural Steel Co.
700 tons, cell blocks, state prison, Auburn, N. Y. Bids in.
400 tons, Christian Science church, Cleveland. General contract to Crowell & Little Construction Co.
400 tons, addition, New York Central terminal, Buffalo; general contract pending.
300 tons, building, Mack Truck Co., St. Louis.
257 tons, reclamation work, Boise, Idaho. Bids opened.
250 tons, addition to Euclid Central school, Chardon road, Euclid, O. General contract to Hebing Co.
225 tons, telephone building, Dobb's Ferry, N. Y.
200 tons, building, Niles Trust Co., Niles, O. Bids in.
140 tons, Clinton substation, Cleveland Electric Illuminating Co., Cleveland. Bids in.
Unstated tonnage, 31-story office building for machinery display rooms, Chicago.
Unstated tonnage, building for Kansas City university, Kansas City, Mo.

Concrete Bars

Large Jobs Scarce—Pending Work Brightens Prospects—Prices Firm in West

SUMMER dullness is reflected in the small number of large concrete jobs closed. Pending work, however, continues to show a heavy aggregate, with 1200 tons up in sewage treatment works at Hinsdale and Peoria, Ill., and with more than 2000 tons up for early award at Buffalo. Seven lettings in California involve 150 to 675 tons at a time.

REINFORCING BAR PRICES, PAGE 215

New York, July 23.—Concrete bar prices remain firm on a basis of 2.30c, Pittsburgh, for cut lengths, and 2.05c for mill lengths. Buying in small lots is fairly brisk, 20 to 30-ton orders bringing the total up to a sizable volume. Several projects involving more than 200 tons are pending. The demand for mesh is fair. Faitoute Iron & Steel Co. booked 230 tons for the Raritan river bridge to be erected by New Jersey. Jones & Laughlin Steel Corp. will furnish 100 tons for a school at Dobb's Ferry, N. Y.

Boston, July 23.—Odd tonnages continue to be placed in the concrete bar market last week and only 200 tons would represent the total. It is expected the new hotel for the Boston & Maine railroad will require 250 tons.

Pittsburgh, July 23.—Incoming business in concrete reinforcing bars is approximating the June rate, with mills having satisfactory backlogs. Delivery extends as far as four to six weeks with prospective work indicating active business into August. Awards for this district are fairly numerous in small lot projects but large individual tonnages are lacking. A fair volume of business, however, is pending. Concrete bars continue 2.30c, Pittsburgh, for cut lengths and 2.05c for stock lengths.

Buffalo, July 23.—Demand for welded mesh for concrete construction continues to tax the capacity of steelworks. Contractors are buying in carloads as demand arises. Two inquiries for 125 to 150 tons of reinforcing bars are noted this week. Former inquiry, totaling in excess of 2000 tons, is not covered to date. This includes a lot of 900 to 1000 tons for the new Buffalo municipal building.

Chicago, July 23.—Moderately heavy reinforcing bar tonnage is shaping up for the future, including more than 1200 tons for sewage treatment works at Hinsdale and Peoria, Ill. About 700 tons will be required for a store and office building in Moline, Ill., and a bank building in Fort Wayne, Ind. Numerous orders for less than 100 tons each are being placed in the Chicago district. More firmness is being shown in billet reinforcing bars at the minimum of 2.40c, Chicago.

Awards Compared

	Tons
Awards this week	6,297
*Awards last week	4,545
Awards two weeks ago	3,927
Awards this week in 1928	5,925
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,350
Average weekly awards, July	5,435
Total awards to date, 1928	210,989
Total awards to date, 1929	190,492

*Revised

CONTRACTS PLACED

800 tons, track elevation work for Chicago, Milwauke, St. Paul & Pacific railroad, Evanston, Ill., to unstated fabricator.
675 tons, school, Twenty-ninth and Geary streets, San Francisco, to Pacific Coast Steel Co.
600 tons, apartment, 1100 North Dearborn street, Chicago, to Calumet Steel Co.
500 tons, hall, University of California, Berkeley, Calif., to Soule Steel Co.
450 tons, United States Veterans' hospital, Coatesville, Pa., to Truscon Steel Co.
370 tons, apartment, O'Farrell and Leavenworth streets, San Francisco, to W. C. Hauck & Co.
300 tons, dormitory, Bancroft way, Berkeley, Calif., to Soule Steel Co.
287 tons, factory, Yosemite street, San Francisco, to Pacific Coast Steel Co.
277 tons, factory, Howard and Montgomery streets, San Francisco, to Pacific Coast Steel Co.
230 tons, state of New Jersey, bridge over Raritan river, to Faitoute Iron & Steel Co.
230 tons, bridge, Bronx, N. Y., to Fireproof Products Co.
200 tons, garage, Hackensack, N. J., to Joseph T. Ryerson & Son Inc.
200 tons, department of sewers, Cincinnati, to West Virginia Rail Co.
175 tons, shop at Harmon, N. Y., for New York Central railroad, to McClintick-Marshall Co.
168 tons, state highway work, Phoenix, Ariz., to unstated interest.
150 tons, factory, California Conserving Co., Hayward, Calif., to Pacific Coast Steel Co.
150 tons, state office building, Harrisburg, Pa., to American Steel Engineering Co.
150 tons, hotel, Youngblood Hotel Co., Enid, Okla., to J. B. Klein Iron & Foundry Co.,

through D. C. Bass & Sons, general contractors.
150 tons, power house, Fourteenth street, New York, to Fireproof Products Co.
135 tons, bridge, 233rd street, New York, to Tidewater Structural Materials Corp.
100 tons, school, Dobb's Ferry, N. Y., to Jones & Laughlin Steel Corp.

CONTRACTS PENDING

1000 tons, sewage treatment work for Peoria, Ill.
700 tons, assembly plant, Chevrolet Motor Co., Tarrytown, N. Y.
550 tons, service station, Packard Motor Co., Newark, N. J.
500 tons, improvements at Rockaway Beach, N. Y.
400 tons, First National Bank building, Fort Wayne, Ind.; bids being received.
325 tons, sewer construction, Plainfield, N. J. Taking bids.
300 tons, building, Shell Oil Co., San Francisco. Bids being received.
300 tons, store and office building for Fifth Avenue Realty Building Corp., Moline, Ill.
290 tons, cold storage plant, Tacoma, Wash. Bids being received.
215 tons, sewage treatment work for Hinsdale, Ill.
208 tons, state highway work, Alameda county, Sacramento, Calif. Bids received.
204 tons, bridge at Batchellerville, N. Y.
200 tons, buildings at Roosevelt airfield, New York.
180 tons, coal pocket, Delaware, Lackawanna & Western railroad, South Brooklyn, N. Y.
150 tons, water system, Gowanda, N. Y., bids in.
125 tons (mesh), for highway 99, Elk county, Pa.; Charles H. Fry, Erie, Pa., general contractor.

Iron Ore

Less Ore Consumed in June—Shipments Continue Heavy

IRON ORE PRICES, PAGE 216

Cleveland, July 23.—Furnaces using Lake Superior iron ore consumed 303,596 tons less in June than in May, according to report from the Lake Superior Iron Ore association. There has been no decrease in shipments from the head of the lakes. The association's current report follows:

	Tons
Ore consumed in May	5,980,248
Ore consumed in June	5,676,652
Decrease in June	303,596
Ore consumed in June, 1928	4,667,493
Ore at furnaces July 1, 1929	19,618,611
Ore on Lake Erie docks July 1, 1929	4,082,400
Total at furnaces and Lake Erie docks July 1, 1929	23,701,011
Total, July 1, 1928	22,980,603

Metals Indices Higher

Washington, July 23.—June wholesale price index number for iron and steel was 98.2, compared with 98.4 for May and 94.2 for June of last year, taking 1926 at 100, according to the bureau of labor statistics, department of labor.

Structural steel June index number was 99.6, compared with 99.6 for May and 94.5 for June of last year, while nonferrous metals June wholesale index number was 104.8, compared with 104.9 for May and 92.8 for June of last year.

Wisconsin and Pennsylvania produce 78 per cent of fuel briquets made in the United States.

Rails, Cars

Rail Orders Reach Mills—Car and Accessory Buying Smaller, Locomotives Active

MIDSUMMER has hit the rail, car and track accessory markets, each reporting setbacks. Recent rail orders have reached western mill books and Northern Pacific's 15,000-ton order is expected by Aug. 1. Great Northern asks for 300 flat cars; otherwise car inquiries are small. Wabash buys 25 locomotives from Baldwin Locomotive Works.

RAILROAD TRACK PRICES, PAGE 216

Chicago, July 23.—Miscellaneous lots of standard steel rails purchased by western roads, total about 3000 tons. Western rail mills also have booked about 2000 tons of the Pennsylvania's rail order. Great Northern's 30,000 tons have just been entered on mill books. The Northern Pacific inquiry, for probably 15,000 tons, is expected Aug. 1. Track fastenings booked last week total 1500 to 2000 tons. Rail mill operations now are about 70 to 75 per cent, a drop of about 5 points in the past 30 days.

One western road has ordered 2000 to 3000 tons of finished steel for car building and repairs. Specification for finished steel from car shops are at a high level and are expected to continue there for at least 90 days.

New York, July 23.—While the great bulk of the freight cars recently figured was for eastern railroads, buying in this district has been light. Approximately 2300 freight and 540 passenger cars are actively pending. Meanwhile, inquiry is featureless. A leading locomotive award calls for 25 for the Wabash. Three other locomotive orders just placed involve one to three at a time. Seven electric locomotives also were bought. Track accessory business is quiet, a condition prevailing for the past 30 days.

Pittsburgh, July 23.—Little activity is noted in new inquiry for rails, fastenings or cars. The month is showing the usual seasonal decrease in specifications for fastenings, although demand is slightly ahead of the rate a year ago. Steady demand is noted in light rails, the month's tonnage comparing favorably with the volume earlier this year. Prices are generally well maintained on all fastenings.

Toronto, Ont., July 23.—Railroads, which have given the steel market so much support this year, have announced programs of even more extensive development work. Expenditures in western Canada by the Canadian Pacific and Canadian National will involve approximately $100,000,000 for new trackage, replacing 80-pound with 100-pound rails. The former road plans rolling stock purchases to cost $44,238,000, including 7500 steel-sheeted 60-ton box cars, 31 freight and passenger locomotives, 120 sleeping and passenger cars, 1411 stone, coal, ore and flat cars, 300 freight and express refrigerator cars, and 200 steel-sheathed automobile cars.

CAR ORDERS PLACED

International Harvester Co., 13 70-ton hopper cars, to Pressed Steel Car Co.
John A. Roebling's Sons Co., 10 gondolas, to American Car & Foundry Co.

LOCOMOTIVE ORDERS PLACED

Andes Copper Mining Co., two trolley type locomotives and one storage battery locomotive., to Westinghouse Electric & Mfg. Co.
Bessemer & Lake Erie, one locomotive, to Baldwin Locomotive Works.
Campbell River Timber Co., one locomotive to Baldwin Locomotive Works.
Cearense railroad, Brazil, three locomotives to Baldwin Locomotive Works.
United Verde Copper Co., four storage battery locomotives to Westinghouse Electric & Mfg. Co.
Wabash, 25 locomotives, to Baldwin Locomotive Works.

CAR ORDERS PENDING

Canadian Pacific, 7500 steel-sheeted 60-ton box cars; 120 sleeping and passenger cars; 1411 stone, coal, ore and flat cars; 300 freight and express refrigerator cars and 200 steel-sheathed automobile cars.
Cudahy Packing Co., 50 freight car underframes.
Great Northern, 300 flat cars and 300 flat car underframes.
Newfoundland railway, 20 30-ton gondolas.
New York, New Haven & New Hartford, 75 coke car bodies.
Spokane, Portland & Seattle, five caboose cars.
Texas Co., 18 50-ton gondolas.

LOCOMOTIVE ORDERS PENDING

Canadian Pacific, 31 freight and passenger locomotives.
Texas & Pacific, five locomotives.

Steel Employment Trend Upward in June

Washington, July 23.—General industrial employment decreased 0.3 per cent in June compared with May and payrolls totals decreased 1.9 per cent, according to the bureau of labor statistics. There was an upward trend in employment in June compared with May in the iron and steel industry. Automobile factories reported a drop in employment of 7.2 per cent, and shipbuilding yards 1.1 per cent.

Employment increased in the iron and steel industry 7.4 per cent in June of this year compared with the same month of last year.

Strip

Buying Equals or Exceeds June —Weather Holds Back Production—Deliveries Still Delayed

IN SPITE of lessened demand from automotive users of strip sales in July are holding up to those of June in many cases and deliveries are not being reduced materially. Hot weather has curtailed production somewhat and prevented further reduction in backlogs. Prices remain firm at the established levels. July production will be less than in June.

STRIP PRICES, PAGE 216

Pittsburgh, July 23.—Despite a lessening in automotive tonnage of strip steel, incoming business this month compares favorably with the corresponding June total and for some producers business is ahead of last month. Cold-rolled strip is increasingly active, with backlogs extended further on this material than on hot strip. Cold-rolled backlogs represent four to five weeks' work, with shipments on hot strip extended three weeks or more. Operations have suffered this month, due to warm weather and the holiday period, and production will fall below the June total. This in a measure prevents backlogs from being reduced further, although shipments are in excess of incoming business. The market continues firm at 1.90c and 2.00c for the two sizes of hot strip, with 2.75c the minimum on cold-rolled material. Smaller tonnages of the latter take 2.85c.

New York, July 23.—The general tone is easier, but strip steel prices are unchanged. Specifications are steady.

Philadelphia, July 23.—Strip mills continue scheduled full although more anxious for tonnages for early rolling. Prices are unchanged except that occasional sales of hot strip over 24 inches are made on a plate price basis.

Cleveland, July 23.—Automotive consumption of hot and cold strips continues to taper. In a few outstanding cases, specifications are unchanged from the high June rates, such instances being confined usually to parts makers for the cheaper cars. Deliveries on hot strip are five to 10 weeks deferred, depending upon width; cold strip is two to four weeks. Cold strip is 2.75c, Cleveland or Pittsburgh, and hot 1.90c and 2.00c, Pittsburgh, for wide and narrow, respectively.

Chicago, July 23.—Cold-rolled strip tonnage has declined sharply, but orders taken prior to July 1 supply backlogs of two to three weeks.

Cold Finished Steel

Bookings Keep to High Rate for Midsummer Season

COLD FINISHED PRICES, PAGE 216

Pittsburgh, July 23.—Incoming business in cold-finished steel bars is running only slightly below June and is considered satisfactory for July. Announcement of a revised set of extras for cold-finished steel bars, as described more completely elsewhere in this issue, is expected to eliminate some inequalities. The new card is makers experienced a decided letup last month and these now are receiving better specifications from their automotive customers. Spark plug effective at once but will not apply to buyers who are under contract over the current quarter. Lower chemical extras, however, are applicable immediately.

Cleveland, July 23.—Cold-finished bar demand is improving. Some manufacturers are calling for larger tonnages of hexagons. Other parts makers too are picking up. One or two consumers are still curtailing specifications, but these will do better next month. The 2.35c, Cleveland, price is entirely firm.

Electric Billings Higher

General Electric Co. sales billed for the first six months of 1929, announced by President Gerard Swope, amounted to $194,353,307.99, compared with $158,015,221.41 for the corresponding period last year, an increase of 23 per cent. Profit available for dividends on common stock for the first six months of 1929 was $30,740,768.02 compared with $24,388,002.58 for the same six months last year.

Wire

Nails Continue Weak Spot and Stocks Are Large—Wire Demand Is Holding Well

BUYING of wire and wire products, except nails, continues to exceed that in June and mill operation is not reduced. Jobbers are not ordering nails and fencing but manufacturers continue to take wire steadily. Prices are steady except for occasional shading in nails. Heavy nail stocks are said to be a cause for weakness in that product.

WIRE PRICES, PAGE 216

Chicago, July 23.—Moderate improvement is shown in several lines of wire products, but jobbers and retail orders for nails and woven fencing are decidedly slow. Heavy stocks are reported in nails. Manufacturers' wire products, while much below specifications of 30 days ago, are holding to fair activity. Operations of western wire producers average about 65 per cent. Prices are reported fairly steady on the basis of 2.55c, Chicago or western mills, for bright plain wire, and $2.70 for wire nails.

Worcester, Mass., July 23.—Steady demand and firm prices on a basis of 2.75c for plain bright wire feature the market here. Notwithstanding the expected drop which has developed in some markets, production remains high and outlook for third quarter is good.

Buffalo, July 23.—Demand for wire is good. This is the seventh month of operation of Buffalo wireworks at 85 to 90 per cent, with no sign of early slackening. Prices are holding firm, sellers report.

New York, July 23.—Notwithstanding continued good wire demand, with prices firm, the nail market is soft. While $2.65 to $2.75, base, is being quoted by most leading sellers, this range has been shaded. This situation is attributed in some trade quarters as being due largely to what they believe is a recurrence of the unsatisfactory condition in jobbing trade.

Pittsburgh, July 23.—Sales of wire products so far this month continue to exceed the comparable June total. Demand is well diversified for manufacturers' wire, and slight improvement compared with June is noted in some directions in wire nail business. Wire fencing demand is only fairly active. The market continues 2.50c to 2.60c, Pittsburgh, for plain wire, with wire nails generally held at $2.65 to $2.75.

Cleveland, July 23.—Steady seasonal demands are noted in wire products. No spectacular orders are being placed for either nails or wire, although occasional attractive orders for heavy wire are placed by nut, bolt or rivet manufacturers. A slight check in automotive consumption last month seems to have ended for the time being, automobile companies ordering more heavily of both nails and wire. Prices in the city are firm, competition being keener in outlying sections.

Nonferrous Metals

Zinc and Tin Prices Are Stronger While Copper Appears on Verge of More Active Buying—Aluminum Market Lags

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
July 17	18.00	18.07½	17.37½	47.00	47.65	6.75	6.55	6.80	23.90	8.25	35.00
July 18	18.00	18.07½	17.37½	46.45	47.25	6.75	6.55	6.80	23.90	8.25	35.00
July 19	18.00	18.07½	17.37½	47.40	48.12½	6.75	6.55	6.80	23.90	8.37½	35.00
July 22	18.00	18.07½	17.37½	47.25	48.10	6.75	6.55	6.80	23.90	8.62½	35.00
July 23	18.00	18.07½	17.37½	47.25	48.10	6.75	6.55	6.80	23.90	8.50	35.00

NEW YORK, July 23.—Zinc and tin quotations have been stronger this week, and copper appears on the verge of more active buying. Lead also seems to be firmer. All the nonferrous metals are tending toward strength though actual changes in prices have been extremely narrow.

Brass and copper mills are receiving more inquiries, mostly for early shipment. In some instances, customers are asking for quicker delivery of brass products than mills can conveniently give. Users have held off on buying for a long time because of the belief that copper prices would decline this summer. It now appears that they must buy more actively.

Copper—Domestic buyers have shown more interest in copper lately. Nearly all inquiries are for prompt and August shipment. Actual sales, however, still are light, and nearly all business is going to custom smelters while producers remain out of the market. The latter are nearing the end of their old orders. Export sales were fair size this week and unusually large today.

Zinc—Prime western has been quoted firm at 6.80c, East St. Louis. Buying was done a week ago at 6.70c and 6.80c, and since then a little business has been booked at the latter figure. Some interest has been shown in shipments for August and September, and some producers have refused to accept orders for fourth quarter shipment at 6.80c. The users appear to be in need of more metal for August. The ore market is unchanged at $44 a ton.

Tin—Prices have held relatively high compared with quotations in the past few months. Lighter buying in the past day or two has caused some irregularity in quotations. Users have bought for shipment farther ahead than in a long time past.

Lead—Quotations are firm and buying light, mostly for early shipment.

Aluminum—Prices continue unchanged and firm though the market is seasonally slow.—*Daily Metal Trade.*

Quicksilver Is Steady

New York, July 23.—Quicksilver is steady at $122 to $123 a flask.

To make California's 1929 auto license tags 1300 tons of No. 24 gage black sheets was used.

Coke By-Products

Phenol Still Commands Premium—Sulphate Demand Better

New York, July 23.—Light oil distillates, especially benzol, continue to move briskly at unchanged, firm prices. Output holds well and distillates are finding a broad outlet in various consuming industries. Export demand in benzol is fairly brisk for motor fuel. Shipments of tuluol against contracts are heavy. Solvent naphtha is slightly more active, while a steady business against contracts prevails in commercial xylol. Some new business is developing, but present contract requirements are fairly large.

Premiums are being paid for phenol for resale in some instances and no relief in the short supply is noted. Little available material is in the open market and some producers are sold up against shipments to seven or eight weeks delivery.

Naphthalene prices hold firm, both flakes and balls. Demand is steady and there is no surplus.

While the new season in sulphate of ammonia has yet to get under way, due to the cautious attitude of the fertilizer industry, producers note a slightly improved domestic demand and the export market is steady with prices inclined to firmness.

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ¼c more)	10.00
Zinc sheet (100-pound base)	$10.25
Zinc strip (100-pound base)	$9.25
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	12.00 to 12.50
Chicago	11.50
Cleveland	12.50 to 13.00
HEAVY YELLOW BRASS	
Cleveland	8.50 to 9.00
ZINC	
New York	3.25 to 3.50
Cleveland	3.25 to 3.50
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.50 to 14.00
Chicago	12.50
Cleveland	14.00 to 14.50
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	8.50 to 9.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.50
Cleveland	12.50 to 13.00
LIGHT BRASS	
Boston	6.75 to 7.25
Chicago	7.50 to 8.00
Cleveland	6.75 to 7.00
ALUMINUM	
Clippings, Cleveland	17.50 to 18.00
Borings, Cleveland	9.50 to 10.00
Cast, Cleveland	12.50 to 13.00
Cast, Boston	10.00 to 10.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	16.25 to 16.50

Coke Oven By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure Benzol	$0.23
90 per cent benzol	0.23
Toluol	0.40
Solvent naphtha	0.30
Commercial xylol	0.30

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.16 to 0.17

Per Pound at Producers' Plants

Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.20 to 2.25

Industries Adopt Codes

Washington, July 23.—The federal trade commission has formerly announced codes adopted at trade practice conferences of the steel office furniture industry April 13 and of the range boiler industry June 4. For both industries representatives of a majority of producers agreed to rules of business conduct, outlawing unfair trade practices. The steel office furniture group has arranged to make public prices paid for used equipment.

Warehouse

Pittsburgh Sales Similar to Last Month's—Other Sections Note Lulls for Various Reasons—Galvanized Sheets Weak at New York

JULY sales by jobbers in Pittsburgh are on a parity with June but elsewhere are below the June volume. Buffalo reports a good demand because of deferred mill deliveries. Spotty conditions prevail in St. Louis. Difficulty in financing building projects curtails buying at Cincinnati. Galvanized sheets are weak at New York but advance at Houston, Tex.

New York—Jobbing demand shows some improvement over a week ago. Business is not yet up to the June volume. Structurals and commercial bars continue in outstanding demand. Prices generally are unchanged. Galvanized sheets, however, are somewhat easier.

Pittsburgh—Sales fail to show any letdown, tonnage holding well to the June rate. This is better than the usual seasonal volume. Mill backlogs continue to react to the benefit of jobbers. Plates, sheets and concrete bars are in steady demand. Mill deliveries extend from four to eight weeks. Prices generally are firm.

Buffalo—Demand is good for all warehouse materials. Mills are not yet in a position to work small orders into their schedules, and this small lot business is going to jobbers. No price changes are contemplated.

Cincinnati—The midsummer lull in business is being felt by district warehouses. Outside work is held up because of difficulty in obtaining money to finance building projects. Prices, however, are firm.

St. Louis—Distributors report unusually spotty and irregular conditions. Demand from the building industry is less than a year ago, except in the case of highway construction and other public works. Rural areas lack the activity usual at this season. Some betterment has developed in railroad shops. Price firmness on sheets and bars is noted.

Houston, Tex.—Galvanized sheets are stronger by $2 per ton. The new price is 5.40c. Blue annealed sheets, No. 13 gage and lighter, now are 4.05c, while No. 14 and 16 gage blue annealed sheets copper steel now are quoted at 4.20c.

A survey of data now available in the field of specific heats of gases at high temperatures reveals numerous discrepancies in the observations and disagreements in the equations proposed to represent them, according to the department of commerce, bureau of mines.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles, lcl.	3.00c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.25c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.70c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	4.00c
Philadelphia*†	4.10c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.40c
Los Angeles	5.30c
New York	4.60c to 4.75c
Philadelphia*†	4.85c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons, squares	Flats, squares
Baltimore (c)	3.50c(a)	4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.60c	4.10c
Philadelphia*	3.60c	4.10c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Summer Demand Better Than Usual—Awards and Pending Tonnage Large

DEMAND for iron and steel products all along the Pacific coast is holding up better than usual for the summer season, with prospects excellent for continued large demand. In some products sales are far in excess of the same period last year. While much tonnage is being taken for general improvement projects, building construction also is active.

San Francisco, July 20.—(*By Air Mail*)—Continuation of fairly healthy demand for iron and steel products is noted on the Pacific Coast and some fair sized projects were placed during the week. Concrete bar awards called for the heaviest tonnage of any week so far this year, and plate and structural steel shape awards were above the average. Prices are holding exceptionally well to the levels established some time ago. Rumors persist that the United States Steel Corp. is considering the purchase of Columbia Steel Corp. plants.

Pig Iron and Coke

Pig iron and foundry coke continue to move in limited lots and no large sales were made. Pig iron prices remain unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Concrete bar awards this week totaled 4532 tons, the largest weekly total of the year. Among the larger lots were 675 tons for a school in San Francisco, 287 tons and 277, respectively, for two factory buildings in the same city, and 150 tons for a factory in Hayward, Calif., all placed with the Pacific Coast Steel Co. W. C. Hauck & Co. secured 370 tons for an apartment in San Francisco and the Soule Steel Co. took 500 tons and 300 tons, respectively, for a college building and a dormitory in Berkeley. Most pending business involves lots of 20 to 70 tons. No change in warehouse quotations in either the Los Angeles or San Francisco districts is noted, 2.20c, base, applying on carload lots in San Francisco and 2.30c in Los Angeles.

Awards of plates this week aggregated 5525 tons and brought the total for the year to 80,910 tons, compared with 16,686 tons for the same period last year. Western Pipe & Steel Co. secured 125 tons for a siphon at Vale, Oreg., and the Southern Pacific Co., San Francisco, placed 250 tons for seven tanks for installation at Nevada and California points with the Chicago Bridge & Iron Works. Prices are firm at 2.35c, c.i.f. coast ports.

A number of structural awards were placed this week, the total exceeding 2200 tons. Among the more important lettings were 200 tons for an apartment in San Francisco placed with the Golden Gate Iron Works, and 252 tons for two bridges for the Pacific Electric Railway in Los Angeles, secured by the Virginia Bridge & Iron Co. Bids were opened this week on 257 tons for a reclamation project at Boise, Idaho. Poole & McGonigle were low bidders on 900 tons for a loft building in Portland. No change in prices is noted, 2.35c, c.i.f., being firm.

Other Finished Material

Activity in the cast iron pipe market has eased and few new inquiries came up for figures during the week. Awards totaled 1094 tons, bringing the year's aggregate to 55,250 tons, compared with 48,780 tons for the same period a year ago. The largest letting went to the Underground Construction Co., Los Angeles, and involved 724 tons for the improvement of Lido, Island, Newport Beach, Calif. On 1012 tons for Pasadena, Calif., the Pacific States Cast Iron Pipe Co. was low on the 4-inch and the United States Pipe & Foundry Co. on the 6, 8, 12 and 24-inch pipe. Bids were opened this week on 360 tons for Alhambra, Calif., and on 185 tons for Santa Monica, Calif. Vancouver, B. C., will receive bids next week on 1344 tons. Little of importance has transpired in the market for standard steel pipe and oil country goods.

Northwest Trade Heavy

Seattle, July 17.—General business conditions in the Pacific Northwest are better than normal for midsummer. Demand for iron and steel products is well sustained, some houses reporting a larger volume than in July last year. Prices are holding steady and indications are for an active fall trade.

Bars, Plates and Shapes

Mill prices are firm and steady at 2.35c for bars, plates and shapes. Reinforcing steel is unchanged at 2.30c.

Concrete bar business this week has been confined to small tonnages. The two local mills report sustained operations. Recent contracts have given local plants considerable volume. No large projects have developed although the Kittitas irrigation job, bids Aug. 9, calls for 140 tons of reinforcing and 43 tons of structurals and gates. Government road projects in Montana, bids to be opened at Portland July 23, involve 90 tons of reinforcing and 57 tons of structurals. Long-Bell Lumber Co., Longview, will receive bids July 25 for a log intake lock requiring 125 tons of reinforcing.

The most important inquiry for plates is by Seattle for the Maple Leaf pipe line project, bids July 19. This calls for about 3500 tons of steel pipe, alternate riveted, lockbar or electrically welded. Shell Oil Co. is building a number of small tanks involving about 200 tons of plates, the work being done by several small shops. Western Pipe & Steel Co. has the contract for furnishing the city with 40 sections of 12-inch 12-gage steel pipe.

The only structural job taken by local plants this week went to the Isaacson Iron Works, 100 tons for the Solduc bridge, Washington. The general contract went to Puget Sound Bridge & Dredging Co. Local fabricating shops are busy although small jobs of less than 100 tons each have been the rule during the last month. Bids for the 250-foot steel bridge over the Capilano river, B. C., will be opened at Victoria, B. C., Aug. 6. The tonnage is not known here. Bids for the St. Johns bridge, Portland, the largest job of the year, will be received Aug. 19. The job involves four separate contracts. State officials will open bids July 30 for structurals involved in a new cell block at the Walla Walla penitentiary. Walla Walla county, Wash., will receive bids July 29 for three small steel bridges.

Wholesale jobbers report warehouse items unusually active for this season although the volume of mill business is not so heavy. Demand is well sustained and prices are holding firm and unchanged. Sheets are not up to the volume of a year ago but light gage plates are in good demand.

Old Materials

Japanese buyers appear more active in seeking good stocks of steel scrap, and are paying good prices at points where the Seattle steel mills do not compete. Freight rates to the Orient are weak and shippers are taking advantage of cheap transportation. Prices of scrap paid by the mills here are unchanged at $10 and $11, gross, receipts being quite heavy. There is not much interest in cast iron scrap, which is qouted at $14.50 to $14.75, gross.

Clark Buys Frost Gear

Clark Equipment Co., Buchanan, Mich., has acquired 60 per cent of the common stock of the Frost Gear & Forge Co., Jackson, Mich., through an exchange of stock. The Clark company manufactures axles, wheels, brakes, transmissions, twist drills, and gasoline propelled haulage vehicles for industrial use. The acquisition, it is said, strengthens the Cl rk company's position in the automotive parts industry.

Steel Corp. To Acquire Coast Plant?

New York, July 23.—James A. Farrell, president of the United States Steel Corp., refuses to comment on reports received from Pacific coast that the corporation was negotiating for the purchase of Columbia Steel Corp., San Francisco.

According to reports from San Francisco, R. W. Kinney, chairman of executive committee, and L. F. Rains, vice president and general manager, of the Columbia Steel Corp., and Herbert Fleishhacker, a banking interest, are on their way to New York to further negotiations.

The Columbia Steel Corp., whose total assets are said to amount to nearly $40,000,000, was incorporated in Delaware in 1922 as a merger of the Columbia Steel Co. and the Utah Coal & Coke Co. The company acquired the Llewellyn Steel Co., Los Angeles, in 1923, the Milner-Dear-Lerch iron holdings at Iron Mountain Utah, and the Pacific Sheet Steel Corp., South San Francisco, Calif., in 1926.

The company is said to own 66 2/3 per cent of the preferred and 50 per cent of the Class A common stock of the Pacific States Cast Iron Pipe Co., at Ironton, Utah. Plants are located at Pittsburg, Calif., Torrence, Calif., Portland, Oreg., and Ironton, Utah.

Malleable Output Low

Washington, July 23.—Malleable castings production for June was the lowest of any month this year, although higher than June, 1928. Production for the first six months compared with 1928 shows an increase of more than 15 per cent, according to the department of commerce. Monthly comparisons follow:

1928	Production net tons	Shipments net tons	Orders booked net tons	Per cent of capacity operated
June	67,090	66,737	61,071	69.9
Total, (6 mo.)	394,874	385,228	384,009	68.2
July	60,290	60,084	60,964	63.1
Aug.	68,606	66,962	66,128	72.1
Sept.	62,665	61,736	61,163	66.3
Oct.	70,054	68,510	65,780	73.4
Nov.	63,560	58,346	59,664	66.8
Dec.	59,428	56,867	61,182	63.4
Total, year	779,477	752,733	758,890	67.9
1929				
Jan.	73,364	77,424	77,047	*77.9
Feb.	73,875	70,914	77,849	77.2
March	83,365	81,425	87,261	87.8
April	83,838	81,062	80,679	*87.9
May	80,901	78,925	77,262	81.6
June	**71,055	71,311	64,581	73.8
Total, (6 mo.)	466,398	461,838	463,700	81.2

*Revised.
**Preliminary.

Bethlehem Steel Corp. will add six stories to its present 7-story main office building at Bethlehem, Pa., at a cost said to be $750,000.

Pig Iron

(*Concluded from Page* 217)

Birmingham. The sales are slightly above normal, mainly to regular users of southern iron. They include 1000 tons, placed in this district. It is reported Jackson county furnaces have reduced prices of silvery iron $1 a ton.

St. Louis, July 23.—Since July 1 there has been a moderate decline in the rate of pig iron deliveries contracted with June, but July is likely to show the highest record for the month in this district. Sales in the past several days totaled slightly under 3000 tons. The largest sale was 500 tons, to an Iowa manufacturer of heating apparaus, made by the St. Louis Gas & Coke Corp. This producer also reported sales of 600 tons of malleable to nearby Illinois shops, and 1000 to local jobbing plants. Prices are unchanged.

Birmingham, Ala., July 23.—Surplus stock of pig iron in Alabama has not beeen reduced much by the recent price reductions, and some curtailment in production is planned. Local consumption has improved slightly. Furnace interests continue to quote $14.50, base, Birmingham, although $14 is being done on business in the Middle West.

Philadelphia, July 23.—About 10,000 tons of basic iron was purchased from northern furnaces during the past week, and about 10,000 more is expected to be placed with southern producers. The price done is a reduction from previous levels. The J. L. Mott Co.'s plant at Trenton, N. J., placed 200 tons of foundry iron, and a textile machine company at Reading, Pa. purchased 300 tons. Standard Sanitary Mfg. Co. is inquiring for 2000 tons for Baltimore. The National Radiator Co. has not yet acted on in its inquiry for 3500 tons for Trenton.

Eastern Pennsylvania pig iron producers have filed a protest with the interstate commerce commission against the 76-cent reduction in the rail and water rates on pig iron from Birmingham to North Atlantic ports, scheduled to become effective Aug. 1. The protest was filed by H. C. Crawford, traffic manager, Bethlehem Steel Co., acting jointly for Bethlehem Steel Co., Alan Wood Steel Co., Delaware River Steel Co., Reading Iron Co., Thomas Iron Co. and E. & G. Brooke Iron Co.

New officers announced by the Buffalo chapter of the American Society for Steel Treating are as follows: Chairman, Robert E. Sherlock, metallurgical engineer, Donner Steel Co., Buffalo; vice chairman, Herbert J. Cutler, engineer of tests, Bethlehem Steel Co., Lackawanna, N. Y.; secretary, Charles F. Wahl, chemist, Pratt & Letchworth Co., Buffalo; treasurer John H. Birdsong; metallurgist, Pratt & Letchworth Co., Buffalo.

Operating Rates

Pittsburgh Rate 95, Chicago Retains 98, Valley Is Unchanged

Pittsburgh—What slight decline is noted in some directions in ingot output is largely accounted for by interference through mechanical troubles and warm weather. The current rate is practically 95 per cent, which for mills represents physical capacity. Sheet mills are at 95 to 100 per cent, unchanged from last week, with tin plate schedules steady at close to 95. Strip mills generally continue at capacity. Pipe mill operations are unchanged at 60 to 65 per cent for welded and 65 to 75 per cent for seamless.

Chicago—Fluctuations are reported in operating schedules because of hot weather, but in the main a 98 per cent ingot rate is being maintained. The leading producer has been reducing cold metal stocks to some extent, but mill departments are able to absorb without difficulty all blast furnace output. Twenty-nine of the 36 steel works furnaces in the district are blowing. Bar, plate and structural mills are close to capacity operations. Sheet mill operations for the district are 80 to 85 per cent. Indications are that July finished steel production in this district will set a record for that month.

Youngstown, O.—Steelworks operations are unchanged. In fact they are at a higher level than usual for this season, due to the more favorable cool weather. Steel output of independent mills will be the same as last week, with 45 of 51 open-hearth furnaces in operation. Bessemer operations will be continued on the two-turn system. Steel corporation subsidiaries continue around 90 per cent. Independent bar mills are at 75 and Carnegie Steel Co. at 90 per cent. Independent sheet mills are operating 115 out of the district's 120 sheet units. Independent tin plate mills are at capacity and Steel corporation mills at 90 per cent. Strip mill operations continue at 100 per cent, unchanged from that of the past nine months. Wrought pipe activity includes 13 out of 20 seamless and welded units. Girard iron plant is operating its rolling mills at 100 per cent and puddling mills at 60 per cent.

Buffalo—Operations in the Buffalo district hold their pace at the limit of steelworks to produce billets. Thirty-two of 37 open-hearth furnaces in the district are melting this week. Others are being prepared for operation as rapidly as possible. July schedules are expected to hold this level.

Birmingham, Ala.—Steelmaking in the Birmingham district is estimated at 90 per cent or better. Practically all open-hearth furnaces in the district are in operation.

The American Institute of Steel Construction Inc., has incorporated in its new fact book of the structural steel industry a bibliography of industrial films. All of these motion picture films, illustrating some process of steel making or of steel erection, are available for loan.

Finance Committee Now Rewriting Tariff

Washington, July 23.—With hearings by the senate finance committee on the tariff bill concluded, the 11 Republican members of the committee yesterday began rewriting the house bill in executive session. It is the general opinion in Washington that the revised bill will not be ready for the senate before Sept. 1, although the senate convenes Aug. 19.

The full majority membership of the finance committee and not the subcommittees are considering this bill.

Senator Reed, of Pennsylvania, who is chairman of the subcommittee on the iron and steel schedule, has asked the tariff commission to translate the ad valorem rates as contained in the house bill into the so-called American valuation plan. This may take three weeks. It is not, however, believed that the senate will change from the ad valorem rates provided in the house bill.

Under leadership of Senator Simmons, of North Carolina, minority leader of the finance committee, the Democratic members are lining up forces to fight the bill when it reaches the floor. There is every indication at this time that it will take much talk and bargaining before the bill is finally passed by the senate and finally made law. Many are of the opinion that the bill cannot become a law until the regular session in December.

Of the 39 planers exported from the United States in April, Canada and Netherlands each took nine.

Lay Plans for Manufactures and Distribution Phases of 1930 Census

WASHINGTON, July 23.—Co-ordination of statistics covering the nation's manufacturing output valued in 1927 at over sixty-two billion dollars, with the census of distribution data to be collected next year for the first time, will be the primary subject of discussion at the commerce department Thursday when a number of manufacturers, economists and statisticians meet with officials of the commerce department and representatives of the American Federation of Labor, the chamber of commerce of the United States, the National Association of Manufacturers, and others.

According to Secretary Lamont, the group referred to have been invited by the department to become members of an advisory committee in planning for the 1930 census of manufactures, which is intimately associated with the coming fifteenth decennial census. Both the manufactures and distribution censuses will cover the year 1929.

This is the third census advisory committee which has been formed, the other two, namely, the advisory committee for the census of unemployment, and the advisory committee for the census of distribution, having held sessions in the department last week. It is planned to organize a fourth advisory committee in connection with the census of population.

In a general sense, according to Secretary Lamont, discussion at Thursday's conference will include the scope of the manufactures-census schedules, the establishment of a line of demarcation between the manufactures census and the census of distribution, and determination of additional inquiries, if any, which it might be desirable to include in order to throw more light upon the distribution enumeration which represents an entirely new government project.

According to the census bureau, manufacturing activities are classified for census purposes into 340 separate industries, of which 114 are canvassed by means of a general schedule and 226 by special schedules. The combined number of inquiries on all the manufactures schedules used at the census of 1927 amounted to nearly 15,000. It is believed to be highly essential to consider special schedules, industry by industry, and that recommendations in regard to a particular schedule should be solicited only from the industry or industries concerned.

Among those invited to serve on the advisory committee on the census of manufactures are Dr. Walter S. Tower, Bethlehem Steel Co.; Clarence M. Wooley, American Radiator & Standard Sanitary Corp.; L. S. Horner, Niles-Bement-Pond Co., and George G. Crawford, Tennessee Coal, Iron & Railroad Co.

As part of the 1930 federal census, effort will be made to obtain detailed information concerning distribution. F. M. Feiker, managing director of the Associated Business Papers Inc., New York, has been named chairman of the committee representing business and industry to assist the department of commerce in the distribution phase of next year's census taking.

Canadian Output of Iron, Steel Declines

Toronto, Ont., July 23.—Production of pig iron in Canada in June was 89,873 long tons, slightly under the 97,379 tons produced in June last year, but the second highest for any month this year. Compared with May, production for June showed gain in basic and foundry grades, while malleable iron dropped to a lower level.

For the first half year, production of pig iron in Canada was 518,557 tons. This tonnage replaced the figures of the corresponding period of 1918, at 501,000 tons, as the second highest on record, and was only 1 per cent under the high level of 524,000 tons established for the first half of 1917. During the first half of 1928, total production of pig iron amounted to 468,013 tons. Output for the first half of 1929 included 401,758 tons of basic, 87,052 tons of foundry and 29,747 tons of malleable.

On June 3 one furnace having a capacity of 450 tons per day was blown in at Sault Ste. Marie, Ont., and a 300-ton stack was blown out on June 18. Seven blast furnaces were blowing at the end of June, located as follows: Dominion Iron & Steel Co., Sydney, N. S., 2; Steel Co. of Canada Ltd., Hamilton, Ont., 2; Algoma Steel Corp., Sault Ste. Marie, Ont., 2; Canadian Furnace Co., Port Colborne, Ont., 1.

Production of ferroalloys at 6261 tons in June was slightly below the 6361 tons of May. During the first half of this year total production of ferroalloys was 36,593 tons, 40 per cent over the 26,014 tons made a year ago.

Production of steel ingots and direct steel castings in June dropped to 119,505 long tons from 126,372 tons in May, but was slightly higher than the 116,530 tons reported last June.

For the six months ending June 30, production of steel ingots and direct steel castings was 738,842 long tons, an increase of 14 per cent over the 648,338 tons made in the first half of 1928. This year's output to the end of June included 703,600 tons of ingots and 35,242 tons of direct steel castings.

Class I railroads on July 8 had 204,308 surplus freight cars in good repair and immediately available for service, the car service division of the American Railway association announces. This was a reduction of 13,349 cars compared with June 30, at which time there were 217,657 cars.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

FISHER GOVERNOR CO., Marshalltown, Iowa, has bought the Apex Regulator Co., Decatur, Ill. The plant and equipment of the latter will be removed to Marshalltown and installed near the Fisher plant. The Apex plant will be operated as a separate unit and sales will be handled by Fisher representatives. A. W. Cash, founder of the Apex company, is to be engineer and general manager of the new plant. Apex products are closely allied with those of the Fisher company, which produces automatic pressure control specialties for steam, water, air, gas and oil. The Apex line consists of smaller valves for less diversified uses and is to be enlarged.

* * *

EXOLON CO., Thorold, Ont., manufacturer of abrasives, is installing 10 new furnaces in its plant at a cost of $50,000.

* * *

YOUNGSTOWN BOILER & TANK CO., Youngstown, O., has acquired property in East St. Louis, Ill., for a branch fabricating plant.

* * *

AMERICAN FOUNDRY EQUIPMENT CO., Mishawaka, Ind., recently has opened a sales office at 228 North La Salle street, Chicago.

* * *

DECATUR BRASS & ALUMINUM FOUNDRY CO., Decatur, Ill., Fred Smith, president, has installed four oil-fired furnaces, one of 24 tons capacity, for production of gray iron.

* * *

WESTERN IRON STORES CO., Milwaukee, has been appointed agent in Wisconsin for the products of N. A. Strand & Co., 5001-07 North Lincoln street, Chicago.

* * *

GWILLIAM CO., Brooklyn, N. Y., manufacturer of ball and roller bearings, has moved its manufacturing and office activities to 360 Furman street. Better shipping and manufacturing facilities are available there.

* * *

AMERICAN EAGLE AIRCRAFT CORP., Kansas City, Mo., has bought the Wallace Aircraft Co., Chicago, of which E. Porterfield Jr. is president. The manufacturing activities of the latter will be removed to Kansas City, where it will be operated as a division of Porterfield Aviation Interests Inc., a subsidiary of the Eagle company.

* * *

PENNSYLVANIA BRASS & BRONZE CO. INC., Philadelphia, has moved its offices to Twentieth street above Hunting Park avenue. The company will continue to operate its brass foundry at Twenty-second and Master streets.

* * *

J A. ROEBLING'S SONS CO., Trenton, N. J., is building an addition 240 x 315 feet to its rope shop at Trenton. A copper wire drawing mill is being built at Roebling, N. J., to which will be transferred the copper wire department now in the Trenton plant. It is 200 x 500 feet.

* * *

SERVICE STEEL CO., Detroit, dealers in seamless and welded steel tubing, has opened a warehouse in Buffalo with a stock of seamless tubing. A Buffalo office has been maintained the past year and the warehouse is a further development of the company's service.

* * *

LINDE AIR PRODUCTS CO., 205 East Forty-second street, New York, has established a plant at 2603 Floyd street, Louisville, Ky. Mr. Frye is superintendent of the new plant and W. L. Potts, with headquarters at the Cincinnati plant, is district superintendent.

* * *

SURFACE COMBUSTION CO., Toledo, O., has opened a district sales office in Kansas City, Mo. W. H. Kay will be in charge of the office, which will be headquarters for the territory including Kansas, Nebraska, Wyoming, Colorado, Utah, Missouri, with the exception of St. Louis, and a portion of Texas.

* * *

NATIONAL ACME CO., Cleveland and Windsor, Vt., has appointed the F. F. Barber Machinery Co. Ltd., 32 Front street west, Toronto, Ont., its sales representative in Ontario. Under this arrangement the Barber organization will handle the company's automatic turret lathes, multiple spindle automatic screw machines, multiple spindle automatic chucking machines, various automatics, opening threading dies, collapsing taps, and industrial centrifuges for renewing cutting and lubricating oils.

* * *

PREST-O-LITE CO. INC., New York, has established an acetylene gas plant at 540 East Seventeenth street, Wichita, Kans., in charge of H. Wilson, superintendent under W. Webert, district superintendent, North Kansas City, Mo. Another plant has been established at Youngstown, O., at Jones street and the Pennsylvania railroad, in charge of A. C. Mattison, superintendent under C. G. Holt, district superintendent at Pittsburgh.

* * *

EMPIRE STEEL CASTINGS INC., Reading, Pa., has been formed to take over the business of the Empire Steel Casting Co. The company will continue the manufacture of electric alloy and carbon steel castings. Frank Hodson is president and J. E. Horton is secretary and treasurer. Directors are Charles Shipman Payson, Wallace E. Belcher and D. W. Phillips. The plant has been increased and further additions are planned.

* * *

WEAN ENGINEERING CO. INC., Youngstown, O., recently organized as an engineering and sales organization by R. J. Wean, has become the selling company for the McKay Machine Co., Youngstown, to the iron and steel industry of the United States and Canada. Flinn & Dreffein Co., Chicago, is associated with the Wean Engineering Co. as furnace contractor and combustion engineer on continuous pack heating furnaces for sheet and tin mills. The company will sell continuous pack heating furnaces, automatic tinning equipment, wet tin plate cleaning units, automatic doublers, automatic shearing units and roller leveler equipment.

* * *

CENTRAL ALLOY STEEL CORP., Massillon, O., has takn an important export order for the new stainless steel manufactured in this country under Krupp license. The company will supply its Enduro Nirosta steel for the complete kitchen equipment of the new St. Luke's international hospital in Tokio, Japan. This

hospital will be a showroom of American equipment in Japan and the Far East. P. C. Quintard, kitchen plan consultant, New York, designed this part of the institution. The Central Alloy Steel Corp. also will supply stainless steel for the kitchen equipment of the new Lakeside hospital, Cleveland. Webber & Wells, Chicago, are the architects.

* * *

BAIN-BEAIRD CORP., Shreveport, La., has changed its name to the Beaird Corp. J. Ben Beaird is president.

* * *

WEST POINT IRON WORKS, West Point, Ga., is building an addition to its main plant, to be completed late in the summer, which will add materially to its capacity.

* * *

BLACKHAWK FOUNDRY & MACHINE CO., Davenport, Iowa, will build an addition to house its gray iron molding department, 122 x 164 feet.

* * *

STEEL BLANKING CO., Sandusky, O., manufacturer of cut and stamped metal, has occupied the plant formerly used by the Michel Co-operative Co., at East Sandusky.

* * *

HINDERLITER TOOL CO., Tulsa, Okla., has been awarded a merit banner by Maryland Casualty Co. following a six months no accident campaign. A. G. Loot is plant superintendent.

* * *

CASPERS TIN PLATE CO., Chicago, is operating its new lithographing and coating plant for producing printed plate. The new department has 40,000 square feet of floor space and has space for several additional printing units.

* * *

McWANE CAST IRON PIPE CO., Birmingham, Ala., is using a new method for handling and mechanically ramming flasks invented by James R. McWane, president and founder of the company. A patent recently was granted to Mr. McWane on the new method.

* * *

ECONOMY MACHINE PRODUCTS CO. will erect a 1-story addition, 60 x 92 feet, with foundations for an additional story, to its plant at 5208 Lawrence avenue, Chicago. The annex will be occupied largely by the company's offices. Chicago Industrial Construction Co. is receiving bids.

* * *

EBBERT & KIRKMAN CO. INC., Birmingham, Ala., southeastern machinery distributor, has been appointed distributor in that territory for the Hill-Clutch Machine & Foundry Co., Cleveland, manufacturer of power drive equipment and special machinery.

* * *

AMERICAN HOIST & DERRICK CO., St. Paul, manufacturer of hoisting machinery, has removed its office from 139 Townsend street, San Francisco, to 5515 Doyle avenue, Emeryville, Oakland, Calif. Boyd Nixon, who was in charge of the San Francisco office will continue in charge.

* * *

CO. BARTLETT & SNOW CO., Cleveland, has concluded an agreement with Pneulec Ltd., Mafeking road, Smethwick, near Birmingham, Eng., by which that organization is given exclusive selling and manufacturing rights in the British market for Bartlett-Snow special machinery for handling materials in foundry operations.

* * *

AMERICAN RADIATOR & STANDARD SANITARY CORP., New York, will in all likelihood acquire the plant of the Thomas Maddock's Sons Co., Trenton, N. J. Harold S. Maddock, vice president of the latter company, is reported to have said that while the deal has not yet been closed there is every prospect that negotiations will be completed within a few days. The Maddock plant, erected four years ago at a cost of approximately $2,500,000, is to be taken over and enlarged, should the deal go through.

New Cold Finished Card Advances Small-Size, Cuts Chemical Extras

A NEW card of extras on cold finished steel bars and shafting, important changes of which include higher charges for turned and polished steels and for small-lot shipments and downward revisions in the chemical extras, has just been issued to the trade. The new card is to become effective at once, although since most buyers are under contract for the third quarter it will not become effective in such cases until Oct. 1. Contract buyers, however, will be given the benefit of the new chemical extras, since changes in these represents reductions.

No changes are made in the size extras on rounds, squares, hexagons and flats, and extras for odd and intermediate sizes remain as before. The increases in extras for turned and polished steels are heaviest on the smaller sizes. Producers contend that under the extras on the card dated Oct. 17, 1927 the charges were so low as to entail a loss in handling such business. The extra on size 1⅛-inch, for example, is increased from 25 cents per 100 pounds to $1 and on 1½-inch from 15 cents to 50 cents.

Several new listings are included in the chemical extras, chief revisions of which are reductions on S. A. E. specifications 1010 to 1030 from 25 cents to 15 cents and on S. A. E. specifications 1035 to 1045 from 25 cents to 15 cents per 100 pounds.

New extras for special finish displace old ones applying on piston rod steel and are unchanged on sizes 1⅛-inch and larger, while on the smaller sizes they are higher. Producers state that this change is made because most of the product is now made by the cold drawing, grinding and polishing process, the cost of which is represented by the new extras. Heretofore producers used a special unpublished list to cover these bars and the new extras on sizes smaller than 1⅛-inch are substantially the same as the unpublished list.

Extra for lots of one size and grade for shipment at one time of less than 500 pounds has been increased from $1 to $1.50, while on lots of 500 to 999 pounds the quantity differential has been raised from 75 cents to 90 cents per 100 pounds. There is no change on lots of more than 1000 pounds. Slight increases have been made for lengths shorter than 84 feet.

Extras for accuracy have been revised completely. In most instances, the new extras are lower and the definitions of the accuracy limits have been changed so that extras for oversize accuracy have been omitted, as it is the producer's practice to work from a given size to a specified tolerance undersize. The revision of these extras is expected to clarify a condition which in previous cards was sometimes misunderstood.

A new high record for loading New York barge canal barges was set recently with a cargo of 862 tons

of pig iron from the Donner Steel Co., Buffalo, to New York harbor.

Sheet Sales Increased in June; Output Lower

Sheet sales by independent mills increased from a daily average of 9025 tons in May to 10,264 tons in June. Production decreased from 12,691 tons to 11,261 tons in June, while shipments declined from 12,656 tons to 11,560 tons. The total of sales for June was 307,911 tons, compared with 279,783 tons in May. June production amounted to 337,841 tons, against 393,430 tons in May. Shipments in June were 347,989 tons, and in May 392,336 tons. The National Association of Flat Rolled Steel Manufacturers' complete report for June follows:

	Net tons	Per cent of capacity
Total sales for June	307,911	100.6
Total production	337,841	110.4
Total shipments	347,989	113.7
Unfilled tonnage as of July 1	676,568	221.1
Approximate finished stock on hand awaiting shipments	111,333	36.4
Approximate in stock, unsold	52,274	17.1

Total number of hot mills in the United States is 722 having a capacity for June, 1929, of approximately 451,125 net tons and the perecentage of the capacity to which the figures shown are related is 67.8.

A monthly comparison of sales, production and shipments follows:

	Sales	Production	Shipments
January, 1928	302,921	316,541	274,126
February	266,210	330,565	298,420
March	399,441	366,127	359,532
April	284,070	327,909	327,674
May	250,316	349,367	326,324
June	318,902	311,629	308,741
July	333,357	267,685	278,810
August	254,397	329,396	324,691
September	370,936	318,907	322,876
October	344,614	369,243	354,925
November	346,041	358,402	307,790
December	323,421	302,182	296,687
January, 1929	438,390	391,404	362,229
February	389,496	326,468	325,848
March	464,297	364,202	363,648
April	398,206	375,256	377,274
May	279,783	393,430	392,336
June	307,911	337,841	347,989

Daily averages for the first six months of 1929 follow:

	Sales	Production	Shipments
January, 1929	14,142	12,626	11,685
February	13,910	11,659	11,637
March	14,977	11,748	11,731
April	13,273	12,508	12,576
May	9,025	12,691	12,656
June	10,264	11,261	11,560

Coke Output Exceeds 1928

Output of by-product coke in June was 4,509,564 net tons and of beehive coke 721,500 tons, a total of 5,231,064 tons, according to the federal bureau of mines. In May output of by-product coke was 4,664,242 tons and of beehive coke 597,400 tons, a total of 5,261,642 tons. In June, 1928, the output of by-product was 3,961,268 tons and of beehive coke 301,600 tons, a total of 4,262,868 tons.

Second Quarter Steel Earnings

Best for Any Peacetime Period

REPORTS of earnings of steel companies for second quarter show large gains over second quarter of 1928. This seems to be a reflection of the large production, enabling utilization of entire equipment to its fullest extent, and satisfactory prices well maintained. Indications are that complete figures will show this quarter the best in financial returns of any similar period in peacetime years.

Republic Iron & Steel Co., Youngstown, O., reports net earnings for three months ending June 30 were $3,263,309 after depreciation, depletion, interest and federal taxes, equivalent after preferred dividends to $3.44 per share on common stock. In 1928 second quarter earnings were $1,053,855, equivalent to $1.03 per share of common stock. First quarter of 1929 yielded earnings of $3.03 per share. First quarter of 1928 earnings were 17 cents per share.

Youngstown Sheet & Tube Co., Youngstown, O., shows net income for three months ending June 30 at $6,107,057 after deductions for interest, depreciation and federal taxes, equivalent to $5.90 per share. In second quarter 1928 the corresponding figure was $2,490,891, equivalent to $2.24 a share of common stock. Earnings for first quarter 1929 were $4.22 per share. Second quarter earnings were at the rate of $23.60 per share for the year. In 1928 earnings were $6.10 per share.

Central Alloy Steel Corp., Massillon, O., reports net earnings for second quarter were $1,892,934 after all charges. This is equivalent to $1.32 a share on the common stock. For second quarter 1928 net earnings were 84 cents per share. For first half 1929 net earnings were $3,324,277, equal to $2.29 a share of common, compared with $2,240,359 or $1.46 a share, for first half of 1928.

Acme Steel Co., Chicago, made net earnings of $1,731,672 for first half 1929, equal to $6.31 per share. This compares with net earnings of $1,014,590 for first half of 1928.

Timken Roller Bearing Co., Canton, O., shows net earnings of $8,449,198 for first half of 1929, equal to $3.51 per share, compared with $6,395,572 or $5.32 per share for first half of 1928. Stock was increased from 1,200,082 shares in 1928 to 2,407,779 shares in 1929.

Harbison-Walker Refractories Co. second quarter earnings are estimated at $1,315,000 after all charges equal, after preferred dividends, to 88 cents a share on common stock. This is an increase of about 26 per cent over the earnings of the corresponding quarter in 1928, which were $1,045,000. For first half net earnings were $2,505,000, equal to $1.65 a share on the common, compared with $2,065,000 for first half of 1928.

Colorado Fuel & Iron Co., Denver, reports net earnings of $1,384,164 for first half, compared with $720,529 for first half of 1928.

Gulf States Steel Co., Birmingham, Ala., is expected to show second quarter net of $400,000, based on April and May operations, with June estimated. First quarter earnings were $354,255, which represented the largest quarterly earnings since first quarter of 1925. Second quarter of 1928 gave net of $203,953. If the estimate of $400,000 is correct first half earnings will be $750,000, compared with $541,802 for first half of 1928 and $371,225 in 1927.

Virginia Iron, Coal & Coke Co., Roanoke, Va., reports a net loss for second quarter operation of $61,011 and for first half of $27,963.

St. Louis Gas & Coke Corp., St. Louis, reports net income before depreciation and federal income tax for six months ending June 30 of $324,969. This compares with net income of $8547 for the entire year 1928.

Superior Steel Corp., Pittsburgh, reports net profit of $73,025 for the quarter ended June 30, compared with a net loss of $63,117 in the same period of 1928. For the six months ended June 30, net profit was $181,377 compared with a loss of $32,357 in the first half of last year.

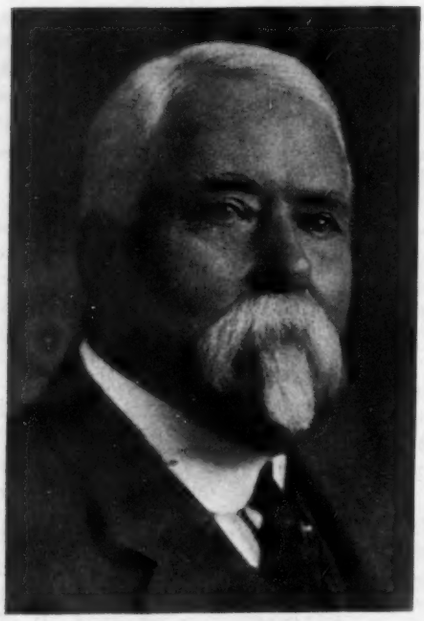
Statisticians See Good Business Ahead

The conference of statisticians in industry, sponsored by the National Industrial Conference board, New York, after reviewing business conditions for the first half of 1929 has reached the following conclusion:

"From all appearances and by the logic of the record to date, the current rate of production and consumption should continue without serious letup for some time to come. No overproduction has yet appeared in measurable quantities. The recovery of agricultural prices is likely to convert a hitherto weakening factor to a stabilizing influence. The credit situation also remains an enigma."

Industrial Men in the Day's News

Willis L. King Celebrates Sixtieth Anniversary of Connection with Jones & Laughlin Steel Corp.



FROM order clerk to vice president spans the course of his industrial career over a period of 60 years with one interest.

CHANGES as varied as they are many have been noted by him in practices and processes within the steel industry.

HE HAS witnessed a growth of 10,000 per cent in his own company's tonnage output and has seen steel ingot production for the country increase from 4,277,000 tons in 1890 to 50,000,000 tons last year.

ALREADY eight years beyond the allotted biblical span of three score and 10 and bound for many more if health and vigor and soundness of mind are any criterion, Willis L. King, vice president of the Jones & Laughlin Steel Corp., Pittsburgh, has the distinction of spending 60 of those 78 years in one industry—iron and steel. To have passed those six decades with one company in that industry attaches to him an aura of business romance which to say the least is unique.

It was July 12, 1869, when as a boy of 18 he sought and gained employment as an order clerk in the original partnership of Jones & Laughlin Ltd., and that event was fitly celebrated on that date this year at Pittsburgh, when 80 or more of his fellow officers and departmental heads sat down with him at dinner to do him honor and to present to him a platinum watch, suitably inscribed.

When he started with the company but five people were in the office. "Everybody, including the boss, arrived at 7 a.m.," says Mr. King, "and left at night only if and when the work in hand was finished." Now the company's main offices occupy 10 floors of a large office building on Grant street near the boulevard of the Allies in Pittsburgh, with overflow offices in the Jones-Law building across the street. The Jones & Laughlin partnership started operations in 1852 and by 1869 had 50 puddling furnaces, each with a daily output of about two tons. The company changed to steel in 1882, 13 years after Mr. King's identification with it started. It now has an output of steel ingots in excess of 10,000 tons daily, so that Mr. King has witnessed a growth in his company of 10,000 per cent.

A native of Pittsburgh, having been born there Feb. 14, 1851, the son of Hugh Davidson King, one of that city's early bankers, and Eliza Ann (McMasters) King, he has lived in that city all his life. While his early ambitious tended toward the legal or medical professions, the iron and steel atmosphere there has furnished his life's breath and has been the source of his never-failing energy, his tireless ambition and his abounding enthusiasm. He was educated in Pittsburgh's public schools and at Newell's academy, that city; also at Washington and Jefferson college, Canonsburg, Pa. He well remembers as a boy and a young man how Andrew Carnegie struggled with more or less indifferent success at the first and with changing partners, to gain a foothold in the iron and steel industry at different locations on the Allegheny river.

Mr. King's entrance into the iron and steel arena came only four years after the initial production of bessemer steel at Troy works. It took 15 years to reach an annual output of 1,000,000 tons but he saw it exceed 11,000,000 tons in 1916. His industrial career early witnessed the onward sweep of steel.

He readily grasped the details of the business and his energetic efforts for the company's interest were re-

warded with successive promotions. These largely were centered in the sales department and he was advanced to be vice president and general manager of sales. He was active in perfecting plans for organization of the Jones & Laughlin Steel Co., which superseded Jones & Laughlin Ltd. He also has been a potent factor in the efforts which resulted in the Jones & Laughlin company becoming fully integrated. When the company was incorporated in 1922, Mr. King again was elected vice president.

His kindliness and affability are proverbial. His hosts of friends in and out of the iron and steel industry attest to the fact that "to know him is to love him." At one time no meeting of the American Iron and Steel institute was complete without him. He has been on that organization's board of directors since it was formed in 1908, and for most of the 21 intervening years has been a vice president. Last year he was made an honorary vice president. On the war industries board he served on the committee on iron and steel products.

One writer after listening at an institute gathering to one of Mr. King's speeches a few years ago entitled "The Golden Rule in Business," said; "The influence which Mr. King has exerted upon the steel industry of the nation can never be adequately measured. He has been one of the outstanding champions and exponents of the highest ideals of life, in private and in business affairs, and his influence for good has been nationwide."

Memberships in several clubs such as the Duquesne, Allegheny Country and Pittsburgh Golf never are allowed to interfere with his spending much time in his home, where he finds his chief pleasure and enjoyment.

Men of the Industry

W. S. PILLING, president, Pilling & Co., Philadelphia, started July 20 on a 9-month trip around the world. Mr. Pilling is the dean of the eastern merchant pig iron business, this being his fifty-seventh year in the industry. Born in Philadelphia in 1857, Mr. Pilling was educated in the suburbs of that city and at 15 went to work as an office boy for the old Crane Iron Co., with headquarters in that city and a blast furnace at Catasauqua, Pa. He was made secretary of that company in 1884, and in 1886 became its executive head. In 1890 he joined William R. Hart & Co., Philadelphia, pig iron merchants, and in 1892 with Theron I. Crane, he organized Pilling & Crane, which flourished for years selling a number of different brands of iron. During the war Mr. Pilling was chairman of the committee of the war industries board which allocated the supply of low phosphorus iron. In 1917 Pilling & Crane were dissolved and succeeded by Pilling & Co., of which Mr. Pilling was president. Mr. Pilling served as secretary of the Eastern Pig Iron association from its organization in 1895 until it was disbanded in 1925.

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C. D. Sterling, affiliated with the Hudson Motor Car Co., Detroit, since 1916, has been appointed director of purchases.

* * *

Arthur J. Wesman, formerly with the Atwill Coke & Coal Co., Chicago, has joined the Chicago sales force of Hickman, Williams & Co. Inc. as a salesman in the fuel department.

* * *

Warren C. Webb, formerly Chicago sales manager for the W. A. Jones Foundry & Machine Co., 4401 West Roosevelt road, Chicago, has been appointed Pacific coast sales manager for the company with offices at 443 East Third street, Los Angeles.

* * *

S. G. Butler, formerly assistant personnel manager of the Buick Motor Co., Flint, Mich., has been appointed to a similar position for the Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich. He succeeds David J. Grant, who recently resigned to become industrial commissioner at Monroe, Mich.

* * *

W. H. Warren, general superintendent of the Lukens Steel Co., Coatesville, Pa., has been elected vice president in charge of operations. He fills the vacancy created recently when H. B. Spackman resigned as vice president and purchasing agent to become chairman of the executive committee, the duties of purchasing agent being assumed by Hugh Kenworthy.

* * *

Herbert D. Templin, formerly in charge of foundries in Passaic and Newark, N. J., has been appointed foundry superintendent of the William T. Barker Foundry, Bridgeton, N. J., recently purchased by the Ferracute Machine Co., Bridgeton, N. J. Its former head and owner, William T. Barker, now is taking a vacation. He has announced no plans for the future.

* * *

Linwood A. Miller has been elected president of the Willys-Overland Co., Toledo, O., succeeding John N. Willys, who becomes chairman of the board of directors. Mr. Willys had been president of the company for more than 21 years. Mr. Miller has been vice president for the past four years.

Marshall Field and Charles M. Glore, both of Chicago, were elected directors, succeeding C. B. Wilson of Pontiac, Mich., and C. B. Mertz of New York.

C. O. Miniger, president of the Electric Auto-Lite Co., for many years a member of the executive committee, was elected chairman. Mr. Glore was named a member of the committee.

* * *

Stanley T. Scofield, effective July 1, assumed new duties as director of market development of the Penton Publishing Co., Cleveland, publisher of IRON TRADE REVIEW and other business papers. Mr. Scofield brings to his new connection an experience of more than 20 years in industrial advertising and sales promotion. For more than six years past he has been the advertising manager of Fairbanks, Morse & Co., Chicago, a position he resigned to join the Penton organization. For two years prior to that he operated an industrial advertising agency in Columbus, O. This followed a connection of some fourteen years successively as advertising manager and divisional sales manager of the Kilbourne & Jacobs Mfg. Co., Columbus, O., manufacturer of industrial car equipment, contractors' equipment, and other steel fabricated products.

* * *

Leod D. Becker, owner and publisher of *Fuel Oil Journal*, recently disposed of his publishing interests and has been elected president of Electrol Inc., St. Louis, oil burner manufacturer. Executive and sales offices are to be removed from 170 Dorcas street, St. Louis, to 227 Forty-fifth street, New York.

W. T. Koken, president of Electrol Inc. since 1925, becomes chairman of

the board. M. E. Simpson, formerly general manager of the Electrol Distributing Corp., recently merged with Electrol Inc., becomes vice president in charge of sales.

Lionel L. Jacobs continues as vice president and general manager.

Han A. Kunitz, formerly technologist of the American Oil Burner association, has been appointed chief of research engineering, in charge of research and development.

Lewis L. Scott, inventor of the original burner produced by the company, continues as vice president and general consultant on patents and engineering.

* * *

George H. Bancroft, formerly buyer of steel and lumber for the Willys-Overland Co., Toledo, O., has been appointed general purchasing agent.

* * *

H. A. Coughenour has been appointed general agent of the coal and ore department of the New York Central railroad, with headquarters at Chicago. He succeeds the late W. L. Harper.

* * *

George A. Archer, president of the Commercial National bank, Columbus, O., has been elected a member of the board of directors of the Buckeye Steel Castings Co., Columbus. He succeeds the late John G. Deshler.

* * *

H. W. Newton, identified for several years with the sales department of the Stephens-Adamson Mfg. Co., Aurora, Ill., material handling machinery and equipment, has been appointed manager of the company's southeastern branch at Birmingham, Ala. He succeeds W. E. Harris.

* * *

Walter M. Sutton, formerly in charge of the St. Louis office of the W. A. Jones Foundry & Machine Co., Chicago, has been appointed manager of its Pittsburgh office. Prior to going to St. Louis, he spent several years in the home office in the manufacturing and engineering department.

* * *

G. B. Fillmore has been appointed general sales agent of the Hudson Coal Co., with headquarters at Scranton, Pa. Mr. Fillmore takes over the duties of the late Ralph W. Clark, vice president and general sales agent of the Hudson Coal Co., under whom Mr. Fillmore acted as assistant sales agent.

* * *

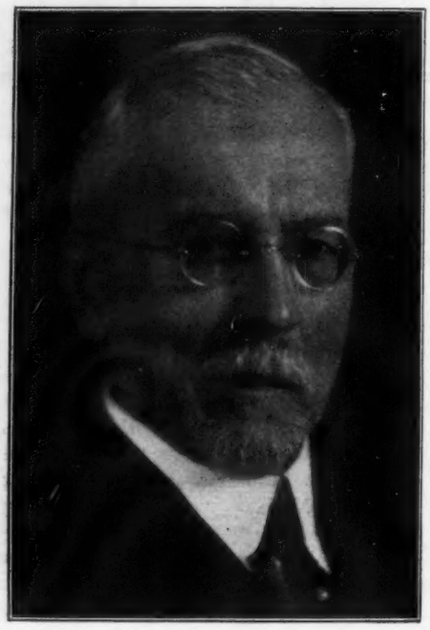
H. R. Adams, for four years president of the Nashville Bridge Co., Nashville, Tenn., is to be president of the newly organized Knoxville Structural Steel Co., Knoxville, Tenn. W. H. Clark is superintendent. The company will manufacture fabricated steel for buildings, reinforced concrete steel and bridge work. Construction of a new plant will begin soon.

* * *

G. W. Foote, formerly general superintendent in charge of production, tools and maintenance for the Republic Metalware Co., Buffalo, has been appointed factory manager of the Perfex Corp., Milwaukee, manufacturer of heavy duty industrial engine cooling radiators. During the war Mr. Foote was identified with the Watertown arsenal.

* * *

W. H. Eisenman, Cleveland, secretary of the American Society for Steel Treating, and Ross G. Purdy, Columbus, O., secretary of the American Ceramic society, have been appointed members of the general committee named by Dr. Frank B. Jewett of New York, chairman of the executive committee of the national research council advisory committee to the Century of Progress, the world's fair centennial to be held in Chicago in 1933.



W. S. PILLING

* * *

E. P. Dillon has been appointed vice president and associate engineer of the E. Y. Sayer Engineering Corp., Knickerbocker building, New York. He was graduated from the engineering school of the University of Colorado in 1899 and for 10 years was engaged in power plant design and construction as well as in the operation and management of gas plants, steam and hydroelectric power systems. He then became affiliated with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and New York, as assistant manager in charge of sales to power stations and substations for lighting, power and electric railway work. In 1918 he was made general manager for the Research Corp. of New York, in charge of sales of the Cottrell processes of electric precipitation to the chemical, metallurgical, gas, electric and industrial fields. He now takes up the design and construction of power and industrial plants with the Sayer corporation.

* * *

G. M. Harris has been appointed superintendent of blast furnaces of the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala., to succeed E. K. Miller who as noted recently is now affiliated with the Jones & Laughlin Steel Corp., Pittsburgh.

* * *

W. R. Cunnick, formerly in charge of strip steel sales for the Weirton Steel Co. at Weirton, W. Va., has been appointed district sales manager at Detroit, to succeed A. J. Bopp, who as stated last week has resigned to form the Bopp Steel Corp., Detroit.

* * *

Adolfo Prieto, president of the Monterrey Iron & Steel Works, Vera Cruz, Mex., recently spent a few days in New York on his way to Spain, where he is to be presented with an honorary medal by King Alfonso XIII. He was the guest of Col. William G. Moler, the company's representative in the United States.

* * *

Charles Blainville, engineer with Alfred Herbert, England, at Paris, and also representative in France for the Heald Machine Co., New Britain-Gridley Machine Co., Le Blond Machine Tool Co., Cincinnati Milling Machine Co. and the Norton Co., sailed for Europe July 19 after two months in the United States visiting his connections in this country.

* * *

E. A. Weaver, Boston district manager for the Surface Combustion Co., Toledo, O., has been transferred to the home office to have charge of sales promotional work.

John R. Waltman, affiliated for some time with the home office in a sales supervisory capacity, has been transferred to Boston to succeed Mr. Weaver. His headquarters will be in the building of the Boston Consolidated Gas Co.

* * *

Chester A. Phillips, formerly associated with the Osgood Co., Marion, O., maker of gasoline, electric and diesel steam shovels, and dredging machin-

(*Concluded on Page* 242)

British Steel Is Unusually Active

Continental Material Making Inroads, Despite Rebate Plan—Pig Iron Demand Falling Off—German Business Improves

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, July 23.—(*By Cable*)—The British steel industry is unusually busy for this time of the year, with fair export demand. Large consumers in Great Britain are pledged to use domestic steel, in accordance with the rebate plan, but continental steel is making inroads in the British market, especially semi-finished material.

Current price being quoted for continental beams is £6 12s ($32), delivered at Birmingham, against £8 2s 6d ($39.40) the domestic price. Activity in constructional engineering is reviving, mainly due to large railroad orders, including 35 bridges. Demand for galvanized sheets and tin plate is weak.

Pig iron demand is falling off following recent heavy sales, but prices are firm. Output in the northeastern district is increasing, subject to coke supplies. Continental competition is appearing, but British hematite is being exported to Belgium and Italy.

A report from Brussels states Belgian iron and steel markets are weak, and the outlook is uncertain. Two hundred tons of merchant steel bars were sold during the week at £5 12s 6d ($27.27). Domestic trade in France is fair, but exports are quiet. German domestic and export business shows some improvement.

British Railroad Equipment Builders Busy

LONDON, July 12—(*European Staff Service*)—European iron and steel export trade generally is less active at present than during the winter and spring months, and continental prices are weak.

On the other hand, substantial orders for railroad rolling stock recently have been received. Hunslet Engine Co. Ltd., Leeds, has obtained the order for two superheated locomotives for the Rohilkund and Kumaon Railway Co. Ltd. The North British Locomotive Co. Ltd. has been awarded a contract for eight 3-cylinder express passenger locomotives by the crown agents for the colonies. The Birmingham Railway Carriage & Wagon Co. Ltd. has received an award for 25 bogie petrol tank cars and five four-wheel cars for South India. The Vulcan Foundry Ltd. has obtained 39 engines and tenders for the Indian State railway. Metropolitan-Cammell Carriage, Wagon & Furnace Co. Ltd., Birmingham, has been awarded contracts for 156 cars, bogies and frames of several types for various British colonies and for the Cordoba Central railway. Other orders for locomotives and freight cars for the colonies have been received by Kitson & Works Ltd., Shrewsbury, Gloucester Co. Ltd., Leeds, Sentinel Wagon Railway Carriage & Wagon Co. Ltd. and Robert Stephenson & Co. Ltd., Darlington.

Thus, while actual exports of iron and steel are not up to expectations, a substantial tonnage is absorbed in the making up of locomotives and cars for export. Shipments of pig iron are fairly satisfactory, and in the week ending July 6 nearly 700 tons were shipped abroad. Belgium

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 22	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$17.82	3 13 6*	$17.46	3 12 0	$17.46	3 12 0†	$17.46	3 12 0
Basic	16.61	3 8 6	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Basic-bessemer	17.58	3 12 6†	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Hematite, Phosphorus 0.02-0.05	17.95	3 14 0	23.63	630*	.....	.....	17.70	3 13 0
SEMIFINISHED STEEL								
Billets	$32.13	6 12 6	$25.22	5 4 0	$25.22	5 4 0	$24.95	5 7 0
Wire rods	41.83	8 12 6	30.92	6 7 6	30.92	6 7 6	30.92	6 7 6
FINISHED STEEL								
Standard rails	$40.01	8 5 0	$31.53	6 10 0	$31.53	6 10 0	$31.53	6 10 0
Merchant bars	1.79c	8 5 0	1.25c	5 13 6	1.25c	5 13 6	1.28c	5 16 0
Structural shapes	1.60c	7 7 6	1.15c	5 4 3	1.15c	5 4 3	1.14c	5 4 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.41c	6 7 9	1.41c	6 7 9	1.40c	6 7 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.90c	13 7 6	3.01c	13 13 9	3.01c	13 13 9	3.08c	14 0 0
Bands and strips	2.17c	10 0 0	1.31c	5 19 6	1.31c	5 19 6	1.32c	6 0 0
Plain wire, base	2.06c	9 10 0	1.65c	7 10 0	1.65c	7 10 0	1.69c	7 14 0
Galvanized wire, base	2.93c	13 10 0	2.12c	9 12 6	2.12c	9 12 6	2.13c	9 14 0
Wire nails, base	2.39c	11 0 0	1.76c	8 0 0	1.76c	8 0 0	1.79c	8 3 0
Tin plate, base box 108 pounds	$ 4.43	0 18 3	.....	.....	.....	.....	$ 8.97	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$17.82	3 13 6	$18.62	475(2)	$17.24	620	$20.26	85
Basic pig iron	16.61	3 8 6	19.99	510(1)	17.10	635	21.69	91
Furnace coke	3.64	0 15 0	6.27	160	5.84	210	5.13	21.50
Billets	32.13	6 12 6	24.30	620	24.60	885	28.85	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.84c	8 10 0	1.36c	755	1.37c	1,050	1.52c	141
Shapes	1.76c	8 2 6	1.26c	700	1.24c	950	1.49c	138
Plates, ship, bridge and tank	1.93c	8 17 6‡	1.49c	790	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.87c	1,595	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.96c	13 12 6	3.68c	2,045	3.58c	2,750	3.78c	350
Plain wire	2.06c	9 10 0	2.03c	1,125	2.15c	1,650	2.48c	230
Bands and Strips	2.17c	10 0 0	1.51c	840	1.59c	1,225	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 15s 6d ($3.76) f. o. b. Ferromanganese £21 13s, 0d ($105.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

and Italy are buying East Coast hematite. British pig iron prices tend to rise, and Middlesbrough foundry pig iron now is £3 13s 6d ($17.80) per ton f.o.b. port of shipment, as against £3 7s ($16.20) in April.

In France, exports are falling off. but the domestic demand is sufficient to keep mills busy. Production during first half has shown an increase, due mostly to home consumption. However, French producers are anxious to maintain their hold on export. markets, as they must find an outlet for at least 40 per cent of their output. In Belgium and Luxemburg there is a recession in export business. Prices tend to drop and there is less demand, even for semifinished steel. Pig iron constitutes a bright spot, and the prices of beams and plates are fairly well maintained. Makers of merchant bars are offering at £5 15s ($28) f.o.b. Antwerp, whereas three months ago the minimum of £6 3s ($29.75) prevailed. On the other hand, during the same period, foundry pig iron has risen from £3 10s ($16.90) to £3 12s ($17.45), and beams from £5 1s ($24.45) to £5 5s ($25.30). Prices continue to be firm at £6 7s 6d ($30.75).

German export business is fairly well maintained and prices are slightly higher than those quoted by French, Belgian and Luxemburg makers, although concessions are made to capture interesting orders. The steel export bounties for July are unchanged, except for heavy steel plates, including boiler plates, for which there is an advance of 1 mark (24c) per ton. The price of beams, British section, is £5 10s ($26.50) f.o.b. port of shipment as against £5 8s ($26.10) quoted at Brussels. Cold-rolled strip has been sold to America, South Africa and India, the base price being £10 17s 6d ($52.75). Merchant bars range from £5 18s to £5 19s ($28.50 to $28.75).

Belgian Steel Prices Weaken as Hoop Syndicate Is Discontinued

BRUSSELS, July 12.—(*European Staff Service*)—The Belgian iron and steel market is passing through a period of complete quiet and uncertainty. Trading is poor in every branch, and the market would be in a worse condition if producers were not as well occupied as they fortunately are. Belgian domestic trade reflects no activity, and the few orders that are being placed are competed for between Belgian and Luxemburg works. In fact, for some weeks Luxemburg has been wanting to do business in Belgium, as export trade is unsatisfactory. The reserved attitude of overseas consumers has severely increased, and there are no prospects of big orders for either semifinished or finished material. It is said that large orders are being held up, but, on the contrary, it is a fact that merchants have nothing on hand.

A factor that will have an unfavorable influence on the market is the discontinuance of the hoop syndicate. Two works, La Providence and Ougree-Marihaye, have given notice of their intention not to remain members of this sales organization. Consequently, as both concerns are important makers of hoops, the other members have decided to withdraw. The first result will be a drop in the prices of hoops and strip, and already it is said that these commodities will be sold below £6 ($29.10), against £6 7s 6d ($30.190), the last official price.

The favorable course of the pig iron market continues, demand being good and prices easily obtained. No change has taken place in the market for semifinished material, which continues to be dominated by shortage of supplies. German works are on the market, but French and Belgian works are not interested in semifinished products. Quotations are as follows: £5 7s 6d ($26.05) for 2 to 2½-inch billets, and £5 4s 6d ($25.33) for 2¾ to 4-inch billets.

The position of sheet bars does not seem to be strong, and a 1000-ton order has been transacted at £5 7s ($25.93), against £5 7s 6d ($26.05) a week ago. The British are not buyers of sheet bars. The market for bars displays great weakness, the position being more serious than a fortnight ago. It appears that while rolling mills have orders, they are not important and guarantee only a few weeks' work. Delays of delivery are about four to five weeks. Prices quoted at the recent meeting of the Brussels iron and steel exchange were the same as those fixed a week previously: for a 40 to 50-ton order, £5 18s, ($28.57),

Franc 2.78c

but for a firm 100-ton order, £5 17s 6d ($28.45) was accepted, and it appears that £5 16s ($28.09) was noted for a big order and an interesting specification. Prices for beams, both normal and British sections, are unchanged.

For wire rods, the Belgian syndicate has decided upon a reduction of 50 francs ($1.38), and the price will be 1075 francs ($29.80), delivered anywhere in Belgium, for July delivery. The weakness in the scrap market is increasing and prices show a further downward trend.

Increased Exports Give Germany Larger Iron, Steel Production

BERLIN, July 12.—(*European Staff Service*)—German pig iron and steel production during June has considerably increased and at present is much larger than in any month since January. These growing quantities have been sold only by placing them abroad, as domestic purchases, although improved, have not kept pace with the rise in production. It is estimated that domestic deliveries of pig iron and raw steel in May aggregated 1,300,000 metric tons, compared with 1,313,000 tons in May, 1928, while export deliveries of iron and steel commodities have increased at the following rate, figures being given in metric tons:

1929	Imports	Exports
Jan.	176,626	419,589
Feb.	111,852	341,312
March	124,555	346,262
April	154,700	619,960
May	170,282	587,115
Jan. to May, 1929	738,016	2,313,737
Jan. to May, 1928	1,183,911	1,999,880

Germany's foreign trade balance in iron and steel has, therefore, considerably improved in comparison with that of last year. With regard to semifinished products, about 75 per cent of all sales effected during recent months has been to foreign countries, while for structural shapes the principal sales have been at home. Nevertheless, exports of these goods also have increased, especially to South America and the Argentine. Exports of merchant bars have declined lately. In sheets, reduced interest by Japanese buyers is felt, and has not been made up by increased Argentine purchases. Foreign demand for pipe is fairly satisfactory, but, on the whole, the pipe business is handicapped by uncertainty governing with regard to the differences existing between Krupp, Mannesmann, and the United Steel Works Co., which, however, it is confidently believed will eventually be overcome.

Domestic sales also have increased, and the average occupation of plants now extends to six or eight weeks. Demand for semifinished products is good, and material for construction of permanent way also has been taken in large quantities, owing to better purchases by railways. Demand for structural shapes has increased, due to more interest shown by the building trade. The position of producers has improved now that considerable stocks accumulated during the period of cold weather early this year have been almost absorbed. A slight improvement has been registered for plates, the time of delivery of which is three to four weeks. The sheet market also has revived, owing to establishment of a joint selling organization by about 50 per cent of the producers. Demand for wire nails has been slightly better, but has hardly satisfied manufacturers, and the same is true of galvanized wire. However, it should be remembered that the present time of year usually is dull, and that only in the fall can a revival be looked for.

Machinery

Inquiries and Awards Hold to Recent Levels —Electrical Interests and Airplane Builders Furnish Large Share of Present Business

ACTIVITY in the machine tool market continues good in most districts, volume of inquiries and awards keeping up with the high rates of May and June. Deliveries remain about the same, six to eight weeks on most standard machines. Westinghouse Electric & Mfg. Co. has placed several large tools on its third quarter list, and considerable equipment still is to be awarded. Makers of parts for airplanes and airplane engines account for a large share of the total business. General Electric Co. and Western Electric Co. are steady buyers in small lots. More purchases at this date appear to be for purposes of replacement than for expansion. Lathes, radial drills, shapers and milling machinery are moving well. Railroads are contemplating little work.

New York, July 23.—Machine tool buying continues heavy. While in spots there appears to be a recession in new inquiry, the volume of orders holds steady. July with most dealers and builders will compare favorably with June. Little improvement is noted in delivery, six to eight weeks being the average on most standard machines. Buying is well spread and is largely confined to one or two units, there being an absence of large lists and little active interest on the part of eastern railroads. Airplane engine builders are active in the market while makers of parts for planes and engines are, in the aggregate, a considerable factor in raising the total volume. Electrical interests are steady buyers. General Electric recently placed nearly a score of tools, including four shapers, lathes, drills and grinders. Western Electric is also a steady buyer in small lots for its Baltimore and Kearny plants. More machine buying appears to be for replacement than was the case several weeks ago when purchases were largely confined to expansion programs. Demand for grinding machinery is brisk. Lathes, radial drills, shapers and milling machinery are active. Delivery on boring machinery continues delayed.

Pittsburgh, July 23.—The machine tool market retains most of its recent activity both in awards and inquiry. Westinghouse Electric & Mfg. Co. has placed several large tools on its third quarter list, and considerable equipment remains to be placed. Inquiries are expected soon from A. M. Byers Co. for its new Ambridge plant, and from Bethlehem Steel Co. for Johnstown, Pa. Little work is pending for railroads. Gulf States Steel Co. has placed four electric cranes and a large number remains pending for plants in this district.

Cleveland, July 23.—A Detroit engineering concern is inquiring for a large list of turret lathes for manufacturing interests in the Ural mountains, Russia. This is a separate item from the $1,000,000 list reported last week, concerning which no further action is reported. Builders are not any too eager to book these largs lists as there is usually some catch in specifications which often makes the order difficult. Production continues at capacity and a widespread buying of small lots keeps equipment moving well. Deliveries vacillate anywhere from six weeks to first of the year.

Chicago, July 23.—Orders for machine tools are spotty with the general volume below June. Contracts for a number of larger units helped to bring up the sales totals of some houses during the week. Billings this month closely approximate the average for most of this year, and several important orders have been closed for August delivery. It is indicated that a fair carryover for August will result. Sales have been active in lathes, milling machines and presses. Specialty tools also moved well last week. Chicago, Milwaukee, St. Paul & Pacific railroad has issued inquiries for a hydraulic press and two heavy duty punching machines. Santa Fe has placed additional orders against its recent list. International Harvester Co. has a program in abeyance, which will include equipment for its additions to the Farmall tractor works at Rock Island, Ill. A motor shop and several other plant buildings are being erected there now. Shipments on lathes and milling machines average six weeks.

CRANE ORDERS PLACED

20 cranes for Great Lakes Steel Corp., Detroit, including ten 15-ton standard overhead cranes; two 250-ton ladle cranes; two 7½-ton soaking pit cranes; two 7½-ton low-type open-hearth charging machines; one 125-ton ladle crane; one 200-ton ingot stripper; one 50-ton overhead crane for blooming mill; and one 50-ton overhead crane for motor room; all to Morgan Engineering Co.

Four electric cranes for Gulf States Steel Co., Birmingham, Ala., two 40-ton with 15-ton auxiliary hoists and two 15-ton, to Alliance Machine Co.

Two 25-ton locomotive cranes for New York Central railroad to Industrial Brownhoist Corp.

Two 15-ton crawler speedcranes for James Stewart & Co., New York, to Forsythe Bros.

Two shovels for Bates & Rogers, Chicago, reported placed with Marion Steam Shovel Co.

Among single orders placed were: 15-ton crawler crane for Arthur A. Johnson Corp., New York, to Koehring Mfg. Co.; 7½-ton crawler crane for B. Leavitt, Rome, N. Y., to Browning Crane Co.; 15-ton crawler speedcrane for Standard Bitulithic Co., Freeport, N. Y., to Forsythe Bros.

CRANE ORDERS PENDING

Among single orders pending were: 10-ton electric overhead crane with 5-ton auxiliary hoist for Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; 20-ton used locomotive crane for Automatic Gravel Products Co. Muscatine, Iowa; used locomotive crane with magnet for Tube City Iron & Metals Co., McKeesport, Pa.

Machine Tool Orders Off

Cincinnati, July 23.—Although the three months' moving average of machine tool gross orders for June declined from May, nevertheless it shows an increase in all indexes over June, 1928, according to figures furnished by the National Machine Tool Builders association. Comparisons follow:

1928	*Index A	*Index B	*Index C	*Total
January	177.6	157.8	181.0	173.6
February	196.0	192.3	206.4	195.8
March	213.9	212.8	208.3	213.4
April	210.9	233.5	198.3	213.8
May	214.7	229.6	194.4	216.4
June	208.5	237.6	206.4	214.0
July	201.3	230.3	237.7	208.0
August	212.7	244.3	253.0	219.9
September	234.9	245.2	249.2	236.8
October	265.5	263.6	240.8	263.5
November	284.4	269.8	254.9	280.0
December	286.0	269.3	294.7	283.0
1929				
January	286.6	278.3	294.2	285.6
February	303.2	285.7	330.6	300.8
March	321.4	319.6	330.8	320.8
April	314.7	339.3	326.4	319.7
May	337.0	306.8	421.8	334.3
June	295.1	279.2	291.0	291.6

*Note—Index A—Base more than $50,000.
Index B—Base $10,000 to $50,000.
Index C—Base less than $10,000.
Base—Average shipments for years 1922-23-24.
Totals—The total of all reports is not an average of A, B and C, but represents the total sum of each item in percentage of the total base.

Crane Shipments Higher

Crane shipments in June totaled 150 units compared with 134 in May, according to figures furnished by the Electric Overhead Crane institute. June volume had a tonnage capacity of 1876¼ valued at $1,091,228.20 against a tonnage capacity of 1485½ valued at $1,122,014.90 the previous month.

New orders in June included 152 units with a tonnage capacity of 1845¼ valued at $1,189,046.86. In May new orders were 181 with a tonnage capacity of 2008 valued at $1,456,541.80.

Unfilled orders July 1 were 494 with a tonnage capacity of 7648¼ valued at $5,047,098.52. On June 1 unfilled orders were 488, with tonnage of 7538¼ valued at $4,785,745.75.

Men of Industry

(*Concluded from Page* 238)

ery, has opened a new business under the name of Chester A. Phillips & Co., 37 West Van Buren street, Chicago. The Phillips company will handle new and used contractors', quarry, railroad and industrial supplies, and marine equipment. The Phillips company is maintaining a yard at 1850 South Kostner avenue, Chicago.

* * *

Harold W. Schroeder has been appointed district sales manager at New York for the Wheeling Steel Corp., Wheeling, W. Va. Mr. Schroeder succeeds the late C. E. Scofield.

* * *

J. L. McInerney, a director of the Nachman Spring-Filled Corp., since the merger in March, has been elected a vice president in charge of the Grand Rapids, Mich., plant.

* * *

A. S. Lonnberg, vice president, W. R. Grace & Co., returned July 20, after having acted for some years as the company's chief executive in South America.

* * *

Arthur U. Klingman, who has been connected with the Bourne-Fuller Co., Cleveland, for 25 years, resigned recently to become vice president in charge of sales of the Foster Bolt & Nut Mfg. Co., Cleveland.

* * *

I. Edmund Waechter, formerly with the Illinois Foundry Co., Springfield, Ill., has been appointed general superintendent of the L. N. N. Foundry Co., 17204 Waterloo road, Cleveland. He will assume his new duties Aug. 1.

* * *

F. A. Weymouth, for a number of years engineer of tests, Maryland Steel Co., Sparrows Point, Md., and later sales metallurgist for the Bethlehem Steel Co., has been appointed chief metallurgist for the Colorado Fuel & Iron Co., Pueblo, Colo.

* * *

C. B. Schneible, affiliated with the American Foundry Equipment Co., Mishawaka, Ind., since 1918, latterly specializing in sand blasting equipment, has been appointed manager of sandblast sales.

J. D. Alexander, with the company since 1916, has been appointed manager of sand preparation equipment. He has been direct factory representative, specializing in sand cutting and conditioning equipment.

M. A. Hanna Co., Cleveland, and Detroit, has increased its capital from 500,000 to 750,000 no par value shares.

Obituaries

FREDERICK H. POOR, 47, president of Frederick H. Poor Inc., 50 Church street, New York, manufacturer and distributor of tractor cranes and allied products, died recently at his home at Yonkers, N. Y. A graduate of Harvard university in 1903, he received an engineer's degree from the same university a year later. For several years he was associated with the General Electric Co., Schenectady, N. Y., and in 1910 became general manager of the S. K. F. Ball Bearing Co., New York. During the war he was president of the Triplex Safety Glass Corp., New York. In 1909 he organized Wesselhoeft & Poor, which exported a variety of machines to Colombia and Venezuela, through four branch offices in those countries. This business was sold in 1926 to the International General Electric Co., after which Mr. Poor organized his own company.

* * *

William Klugel, 55, secretary and treasurer of the Standard Foundry Co. Dayton, O., died July 16 in the plant.

* * *

Albert J. Wessel, 30, secretary-treasurer of the Reliance Foundry Co., Cincinnati, died July 14.

* * *

Joseph Hammele, 61, sales manager and a director of the Bausch & Lomb Optical Co., Rochester, N. Y., died recently.

* * *

William Henry Lane, 88, retired manufacturer of machinery equipment, died at his home at Beacon, N. Y., July 18.

* * *

H. O. Cary, 79, at one time superintendent of the American Steel & Wire Co., DeKalb, Ill., died recently at his home in Bangor, Mich. He had been in failing health for more than a year.

* * *

Walter F. Hooker, 53, manager of the Boston branch of Graton & Knight Co., Worcester, Mass., leather products, died recently at his home in Melrose, Mass.

* * *

Philander E. Lane, 78, construction engineer who directed the building of Young's million dollar pier at Atlantic City, N. J., and founder of the Mount Vernon Bridge & Iron Works, died at Atlantic City, July 17. He was a native of Mount Vernon, O., and entering business at an early age, later moved to Chicago where he established the Long Bridge & Iron Works. He located at Atlantic City in 1902.

* * *

William K. Toole, 63, president and treasurer of the William K. Toole Co., Pawtucket, R. I., hardware and mill supply dealer, died recently at his home in that city, after a lengthy illness.

* * *

Albert J. Wessel, 29, secretary and treasurer of the Reliance Foundry Co., Cincinnati, died at his home, July 13. He also was a member of the executive committee and board of directors of the company.

* * *

P. J. Landwer, assistant production engineer of the Wright Aeronautical Corp., Paterson, N. J., died recently. He had been associated with the company for one year, formerly being affiliated with Mack Trucks Inc.

* * *

George T. Molyneux, 34, for five years vice president of the Price Iron & Steel Co., Chicago, dealer in iron and steel scrap, died recently. Burial was at Bristol, Tenn., his old home, on July 15. Previous to joining the Price company, Mr. Molyneux had served as assistant professor of romance languages at Yale university, his alma mater.

* * *

Thomas E. Murray, 68, an inventor and a designer of large electrical power plants such as the Brooklyn Edison Co., the Hell Gate station of the United Electric Light & Power Co. and the New York Edison Co., and head of the Metropolitan Engineering Co., the Metropolitan Device Corp. the Murray Radiator Co., and Thomas E. Murray Inc., died at his home near Southampton, L. I., July 21. He had been granted more than 1100 patents on inventions dealing with all phases of electrical illuminating, gas, distribution of power and welding.

Urges Merchant Marine

Arguments for the upbuilding and maintenance of an American merchant marine are given by E. M. Herr, vice chairman of the board of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in a pamphlet entitled "American Ships and American Prosperity."

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

East Central

CHICAGO—American Brake Shoe & Foundry Co., Melrose Park Works, is building an addition to its machine shop.

CHICAGO—International Molding Machine Co., 2616 West Sixteenth street, advises it recently purchased property adjacent to its plant for possible future plant expansion.

CHICAGO—Stauffer Chemical Co., 3730 South St. Louis avenue, has awarded contract for the first unit of its plant to be built here to the Truscon Construction Co., Youngstown, O. (Noted July 4.)

CHICAGO—Economy Machine Co., 5214 Lawrence avenue, manufacturer of screw machine products, has been issued a permit for construction of a plant addition, 60 x 68 feet. Estimated cost $18,000.

CHICAGO—Groen Mfg. Co. Inc., 4535 Armitage avenue, manufacturer of copper kettles, etc., advises it has plans for construction of a plant addition, 50 x 100 feet. G. E. Pearson, 4000 West North avenue, is architect.

CHICAGO—Rauland Corp., 850 Blackhawk street, recently incorporated to manufacture radio amplifiers, and electrical devices, advises it has purchased a plant at 3333 Belmont avenue containing about 15,000 square feet of manufacturing space. Some equipment has been purchased and more will be added as required, according to D. MacGregor, general manager. (Noted July 4.)

CICERO, ILL.—Electric Household Utilities Corp., West Twenty-second and South Fifty-fourth avenues, which recently completed an addition, is now constructing a foundry.

ROCKFORD, ILL.—W. F. & J. Barnes Co., 301 South Water street, manufacturer of metal working machinery, etc., has plans for construction of a 3-story plant addition. A. Eliel, Stewart building, is architect.

ST. LOUIS, ILL.—Eagle Foundry Co. will erect a 1-story building, 120 x 160 feet, at St. Clair avenue and S. A. & S. railroad tracks, East St. Louis, Ill.

FT. WAYNE, IND.—Fisher Bros. Paper Co. has awarded contract for a machine shop and service building, 70 x 150 feet, to the W. A. Sheets Construction Co., Utility building.

GREENSBURG, IND.—Odd Fellows home has awarded contract for a power house to Moir & Davis, Westport, Ind. Estimated cost about $150,000.

INDIANAPOLIS—Hetherington-Berner Inc., iron works, 701 Kentucky avenue, recently was damaged by fire, which followed an explosion.

MADISON, IND.—William E. Clark and associates, who recently purchased the Madison machine shop here, plan to remodel the plant and add new equipment in the near future. William E. Clark is president.

RICHMOND, IND.—Swayne Robinson & Co., manufacturer of threshing machinery, advises equipment has been purchased for its foundry addition, now under construction.

CHARLEVOIX, MICH.—Medusa Portland Cement Co., Engineers building, Cleveland, has plans for construction of a cement plant here, according to E. J. Maguire, secretary of the Medusa company.

DETROIT—Ex-Cell-O Tool & Mfg. Co., 1200 Oakman boulevard, advises there are several details to be worked out before plans will be completed for its proposed new plant addition.

DETROIT—Long Mfg. Co., 2768 East Grand boulevard, manufacturer of radiators and clutches, has awarded contract for a 1-story plant addition, 105 x 120 feet, to E. Chase, Penobscot building. Estimated cost about $40,000.

GRAND RAPIDS, MICH.—Leonard Refrigerator Co., 1545 Clyde Park southwest, is having preliminary plans prepared for a plant addition and improvements.

PONTIAC, MICH.—State hospital has plans for the construction of a new power plant in the near future.

TECUMSEH, MICH.—Council has appointed a committee to investigate the advisability of establishing a municipal electric light and power plant.

AKRON, O.—Air Services Inc. has started construction on a hangar, 80 x 130 feet, including a complete machine shop. Estimated cost $40,000.

ALLIANCE, O.—Suburban Light & Power Co., Alliance, will increase the capacity of its power plant at Lake park, near here. Estimated expenditure $400,000.

CANTON, O.—International Steel Corp., recently incorporated, which leased the former plant of the Canton Steel Foundry Co., Allen avenue southeast, to manufacture castings, etc., is completing its financial plans. Present plant will be remodeled and machinery installed. (Noted May 2.)

CLEVELAND—Lincoln Electric Co., 12818 Coit road northeast, will build a 1-story warehouse, 69 x 200 feet. Estimated cost about $65,000.

CLEVELAND—Clifford Ball Inc., care Cleveland airport, will build a hangar, 120 x 130 feet, at the Cleveland airport. Repair shops and a heating plant will be included.

CLEVELAND—Ohio Piston Co., 5337 St. Clair avenue, is having plans prepared for a 2-story plant addition, 60 x 125 feet. Kalsch & Hoefler, 4500 Euclid avenue, are architects.

CLEVELAND—Fairmont Creamery Co., 608 Bolivar road, is having plans prepared for a new plant. Power plant equipment and boilers will be included. Main office is at Omaha, Nebr.

CLEVELAND — Universal Aviation Corp., Boatmens Bank building, St. Louis, has awarded contract for a hangar, 80 x 100 feet, at the Cleveland airport, to the Drake Construction Corp., 420 Lexington avenue, New York. A repair shop and tool room will be included. Local offices are in the Terminal Tower building.

CLEVELAND—Thompson Aeronautical Corp., Union Trust building, will build an addition at the Cleveland airport, 75 x 150 feet, which will add 11,250 square feet, to its hangar. A machine shop will be included. Estimated to cost about $150,000, according to Edwin G. Thompson, president.

EAST LIVERPOOL, O.—Patterson Foundry & Machine Co. advises it has awarded contracts to the Hiner Structural Steel Co., Canton, O. and the Potters Lumber Co., East Liverpool, for an addition to its machine division. Estimated cost about $150,000.

HAMILTON, O.—Champion Coated Paper Co. plans construction of a 19,000 kilowatt power plant.

NORTH CANTON, O. — Hoover Co. has awarded contract for a 4-story plant addition to the Warren Hoffman Co., Witters building, Canton, O. (Noted March 21.)

TIPPECANOE CITY, O.—City, care Roger Benham, has preliminary plans for additions and

Resale News

STOCK of 459 units will be sold at receiver's sale at the Scheinert Co. warehouse, East Hagert and Gaul streets, Philadelphia, July 25. New and reconditioned motors largely making up the offerings. Samuel T. Freeman & Co., auctioneers, will have charge of the sale. Equipment to be sold also includes drills, milling cutters, drill chucks, reamers, grinders, hoisting machinery and other tools.

improvements to the water and light plants. Collins H. Wight, Dayton Savings & Trust building, Dayton, O., is engineer.

TROY, O.—Hobart Mfg. Co. advises it is building an addition containing about 6000 square feet.

WARREN, O.—Republic Iron & Steel Co., Youngstown, O., has plans for construction of a steam electric power plant for its mills here.

YOUNGSTOWN, O.—Standard Devices Co., recently incorporated to manufacture thermostats, plans to build a plant in the near future, according to George H. Jones, general manager. Powell Pressed Steel Co., Hubbard, O., is making the device for the present.

MOUNDSVILLE, W. VA.—United Zinc Smelting Corp., 233 Broadway, New York, has started work on plant improvements and alterations totaling about $200,000 at its plant here.

NEW CUMBERLAND, W. VA.—Hancock County Mfg. Co., recently incorporated to manufacture stampings, has awarded contract for a plant building, to the Boldt-Rapp Co., 5511 Euclid avenue, Cleveland. (Noted July 11.)

BELOIT, WIS.—P. F. Mork Foundry, 132 Blackhawk boulevard, is constructing a 2-story plant addition. A machine shop will be housed in part of the new addition.

FOND DU LAC, WIS.—Among equipment required by the Giddings & Lewis Machine Tool Co., which is building a $100,000 shop addition, 90 x 225 feet, is a 20-ton electric traveling crane. The Austin Co., Cleveland, is general contractor for the building, which will be an assembling and erecting plant. H. B. Kraut is president. (Noted July 18.)

MADISON, WIS.—Contracts have been let by the Smart Motor Co., 437 West Gilman street, for the erection of a new garage and repairshop, 66 x 122 feet. Harry C. Alford, 12 North Butler street, Madison, is architect.

MILWAUKEE—Milwaukee Chair Co., 3022 Center steet, will remodel and enlarge its boiler room and steam generating plant by an addition, 43 x 49 feet.

RACINE, WIS.—Ernest Klinkert, 904 Washington avenue, has plans for a $65,000 garage, service building and storage house, 60 x 207 feet, at 840 Washington avenue. Work will begin at once.

TOMAHAWK, WIS.—Wisconsin Valley Electric Co., 206 Third street, Wausau, Wis., started work July 15 on the reconstruction of its Jersey City hydroelectric generating plant on the Wisconsin river at a cost of $140,000. Byllesby Engineering & Management Corp., 231 South LaSalle street, Chicago, is engineer.

WAUKESHA, WIS.—Ground is being broken by the Glancy Malleable Iron Corp., 840 Wisconsin Central street, for construction of a brick and steel foundry addition, 118 x 208 feet. Work will soon be started on another new unit, 120 x 240 feet, to be used by the shipping department. The general contract for the foundry addition is being executed by the Worden-Allen Co., Milwaukee. (Noted June 6.)

North Atlantic

BRISTOL, CONN.—E. Ingraham Co., manufacturer of clocks, is building a 2-story plant addition, 54 x 80 feet. (Noted March 14.)

HARTFORD, CONN.—Liner-Atwill Co., sheet metal worker, 69 Bartholomew avenue, plans building a 2-story addition, 50 x 100 feet. Estimated cost about $65,000.

HARTFORD, CONN.—Terry Steam Turbine Co., Windsor avenue, is having plans prepared by Westcott & Mapes Inc., 139 Orange street, New Haven, Conn., for a boiler plant estimated to cost about $40,000.

LEWISTON, ME.—American Electro Metal Corp., which has a plant under construction, plans to build additional buildings in the fall including a foundry. (Noted March 7.)

BALTIMORE—Flynn & Emrich Co., 301 North Holliday street, contemplates building a 1-story foundry building. Estimated to cost about $80,000.

MIDDLEBORO, MASS.—Maxim Motor Co., manufacturer of fire engine apparatus, has plans for construction of a three and 4-story plant addition.

SPRINGFIELD, MASS.—Cadillac-LaSalle Co., 563 State street, is having plans prepared for a one and 2-story service and repair shop. Estimated cost about $90,000.

EAST ORANGE, N. J.—C. M. Grey Mfg. Co., 358 Central avenue, manufacturer of bearings, etc., contemplates building a 3-story plant addition. Estimated cost about $75,000.

BINGHAMTON, N. Y.—Our Lady of Lourdes Memorial hospital, 160 Riverside drive, has plans for building a 4-story hospital including a power plant. Estimated cost about $450,000. Murphy & Lehman, 208 Livingston street, Brooklyn, N. Y., are architects.

BROOKLYN, N. Y.—Fire recently damaged the machine shop of the Atlantic Basin Iron Works, 168 Van Brunt street.

BROOKLYN, N. Y.—Brooklyn Borough Gas Co., Mermaid avenue and West Seventeenth street, will build a building to include a 60-car garage, tool and machine shop, storage room and meter proving laboratory. (Noted June 13.)

BUFFALO—Buffalo General Electric Co., Electric building, will build a steam electric plant of more than 100,000-horsepower on the Niagara river. Work to begin in the fall.

CORNELL, N. Y.—New York State Electric Corp., 123 Cayuga street, Ithaca, N. Y., plans construction of an electric plant here.

JAMESTOWN, N. Y.—City will build an addition to the municipal lighting plant to cost about $125,000. It is planned to install a 12,500-kilowatt turbogenerator in the addition.

LONG ISLAND CITY, N. Y.—Deppe-Merten Corp., manufacturer of ventilating apparatus, sky-lights and coping, has leased a building at 565 Boulevard, Long Island City.

NEW YORK—Third Avenue Railroad Co., 2396 Third avenue, is having plans prepared for a bus repair shop addition. E. H. Faile & Co., 441 Lexington avenue, is architect.

NEW YORK—New York Steam Corp., 280 Madison avenue, has awarded contract for an addition, 117 x 178 feet, to steam generating plant at Water and Pearl streets, to the George A. Fuller Co., 949 Broadway avenue. (Noted May 30.)

TROY, N. Y.—Electric Master Machine Co. Inc., 396 Third avenue, recently incorporated to manufacture cooking machines, advises it plans to build or lease building for manufacturing requirements. Equipment will be required, according to Willard H. Read, director. (Noted July 18.)

COATESVILLE, PA.—United States Veteran's bureau, Washington, has awarded contract for the power plant and underground heating lines for the new hospital here to J. L. Powers, Bennettsville, S. C.

LANCASTER, PA.—Dewalt Products Co., manufacturer of wood working machinery, has awarded a contract for a one and 2-story plant addition to D. S. Warfel, Lancaster. (Noted June 6.)

MONACA, PA.—Pittsburgh Tube Co. awarded contract for 2-plant additions to the Pittsburgh Bridge & Iron Works, North Rochester, Pa. Separate contracts will be awarded for cranes, furnaces and other equipment.

PHILADELPHIA—Five buildings of Fayette R. Plumb Inc., 4837 James street, tool manufacturer, were recently damaged by fire.

PHILADELPHIA—Schuch Machine Co., 232 Vine street, manufacturer of paper box machinery, advises it is taking bids for a plant addition, 58 x 150 feet.

PHILADELPHIA—I. Fischman & Son, Tenth and Allegheny streets, manufacturer of soda fountains, plans construction of a plant, 375 x 480 feet, C. E. Wunder, 1520 Locust street, is architect.

PHILADELPHIA—Connery Clarifying Equipment Co., recently incorporated to manufacture pumps, tanks, filters, etc., advises equipment will be manufactured by Connery & Co. Inc., Second and Luzerne streets, Philadelphia, until other arrangements are made. (Noted July 11.)

PHILADELPHIA—General Motors Corp., Detroit, through its subsidiary, the Argonaut Realty Corp., General Motors building, Detroit, has taken title to a tract containing about 58,000 square feet, on Hunting Park avenue, which it will improve with a plant building.

PITTSBURGH—Couty commissioners awarded contract for construction of the city-county airport to the Vang Construction Co., Bessemer building, Pittsburgh, which entered a bid of $1,470,379.

READING, PA.—Empire Steel Castings Inc., recently incorporated to take over the assets of the Empire Steel Castings Co., advises it will

make further additions to its foundry in the near future. (Noted July 4.)

SHARON, PA.—The plant of the Pennsylvania Airplane Co. was recently damaged by fire. K. L. Dunbar is president.

SOUDERTON, PA.—Barker Machine & Foundry Co. is establishing a manufacturing plant here.

Southern States

MONTGOMERY, ALA.—Harry P. Williams, president of the Southern Air Express Inc., Montgomery, and vice president of the Weddell-Wililams Air Service Inc., New Orleans, has plans for building a manufacturing plant at Montgomery in the near future.

HOLLYWOOD, FLA.—City, care C. E. Burgon, city manager, has postponed date for taking bids for construction of waterworks improvements including, pumps and filtering equipment until about Aug. 15.

WEST POINT, GA.—West Point Iron Works has started construction of a plant addition.

NEW ORLEANS, La.—General American Tank Storage & Terminal Co. will enlarge its terminal facilities at Good Hope, La., to provide a larger terminal for liquid cargoes. A 20-car loading rack connected to an 8-inch pipeline is under construction.

BARTLESVILLE, OKLA.—Phillips Petroleum Co. announces construction of a 5000-barrel daily capacity refinery at Wichita, Kans., for which purpose a site of 82 acres adjoining the Barnsdall Refineries has been acquired. A. H. Riney, is chief engineer in charge of construction.

OKLAHOMA CITY, OKLA.—Tennison Bros., sheet metal products manufacturers, have started construction of a new plant, 100 x 300 feet, at 513 North Indiana street.

SHATTUCK, OKLA.—Oklahoma Gas & Electric Co. has started construction of a generating plant addition here to use diesel oil burning equipment. Extensions of highlines will also be made.

TULSA, OKLA.—Telephone Silencer Corp. plans to erect plant for manufacture of a silencer attachment for telephones. J. E. Steinberg, 614 South Elwood street, is secretary.

TULSA, OKLA.—Sinclair Oil & Gas Co. will build absorption type gasoline plants in the new Oklahoma City oil field and also near Wewoka in the Seminole field. H. B. Bernard, Sinclair building, is general superintendent.

JACKSON, TENN.—City plans election Aug. 1 to vote on $750,000 bond issue for proposed construction of municipally-owned light and power plant. (Noted May 13.)

MEMPHIS, TENN.—United States engineers, McCall building, awarded contract for shops and warehouse building, for government depot opposite Memphis, to B. W. Cocke & Sons, 63 South Third street, Memphis. (Noted June 13.)

DENTON, TEX.—City will soon award contract for construction of a 1-story power plant, 86 x 208 feet. J. R. Greenwood, Allen building, Dallas, Tex., is engineer.

MIDLAND, TEX.—California Oil Co. will build an auto storage and repair shop, 100 x 200 feet, for company cars and trucks.

NORFOLK, VA.—Norfolk & Western railroad, Roanoke, Va., plans to start construction at once of two warehouses, adjoining its merchandise piers at Lambert Point (Norfolk). Estimated cost about $250,000.

Western States

PHOENIX, ARIZ.—Phoenix Aircraft Corp., care Floyd Stahl secretary, has plans for construction of a plant for manufacturing airplanes.

BERKELEY, CALIF.—Standard Die & Tool Co., Eighth and Carlton streets, will build a plant addition which will add about 50 per cent more space to the machine shop, according to Roy T. Wise, president.

OAKLAND, CALIF.—Boeing Airplane Co., Seattle, has optioned property at the Oakland airport and plans building an airplane manufacturing plant. Work is expected to begin immediately.

RICHVALE, CALIF.—Pacific Coast Pulp & Paper Co., Los Angeles, has awarded contract for paper mill, including a boiler plant, to C. S. Mabry Co., Fourth and J streets, Sacramento, Calif. Estimated cost about $400,000.

RIVERSIDE, CALIF.—City plans election to vote on a $690,000 bond issue for construction of a waterworks plant, including pumping plant.

PUEBLO, COLO.—Colorado state hospital plans to install new boilers, stokers and water heaters in hospital here. Estimated cost $20,000.

GREAT FALLS, MONT.—City plans early election to vote on waterworks system including filtration plant, pumps, etc. Estimated cost about $750,000.

EVERETT, WASH.—Puget Sound Power & Light Co. has reopened negotiations with city officials for the development of the Sultan river power and water projects. Estimated cost about $16,000,000.

West Central

KANSAS CITY, MO.—Beacon Airways of America Inc., Board of Trade building, has awarded contract for an airplane work shop and sales room to J. F. Gier, 410 East Fifty-fourth street. Estimated cost about $90,000. (Noted July 11.)

KANSAS CITY, MO.—Butler Aircraft Corp., subsidiary of the Butler Mfg. Co., 7400 Thirteenth street, will build a plant for manufacturing airplanes on a 15-acre site adjoining the municipal airport. Three all-steel buildings, the largest, 80 x 112 feet, will be constructed. (Noted June 6.)

ST. LOUIS—New Era Motors, Inc. has completed arrangements with Gardner Motor Car Co. for manufacture and assembly of Ruxton front wheel drive automobiles. Additional machinery will be installed but no new plant investment will be needed.

ST. LOUIS—Stuart Aero Products Inc., manufacturer of airplane parts, has leased a building at Rutger and Thirteenth streets, containing about 12,000 square feet of floor space.

ST. LOUIS—Wackman Welded Ware Co., 2412 South Seventh street, manufacturer of drums and containers, has increased its capital stock from $96,000 to $300,000 to provide for new plant investment.

FAIRBURY, NEBR.—City, care Cecil Simpson, has plans for power plant improvements. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., is engineer.

Canada

NEW WESTMINSTER, B. C.—Plants of the Westminster Paper Co. Ltd. and the Triangle Chemical Co. Ltd. were recently damaged by fire. Estimated loss about $1,250,000.

TRAIL, B. C.—S. G. Blaylock, vice president and general manager of the Consolidated

Mining & Smelting Co., here, reported that the company will spend between $7,000,000 and $8,000,000 within the next two years on the establishing of a chemical and fertilizer plant here. The undertaking will call for the establishing of a power plant to develop 30,000 horsepower.

EDMUNDSTON, N. B.—City council proposes to start work at an early date on the construction of a power house and dam, which with machinery and equipment will represent an expenditure of $200,000. The equipment for the plant will consist of one 1000-horsepower waterwheel; one 100-kilowatt generator, governors, transformers, etc. Thomas Gwerette is clerk. Consulting engineer, H. G. Acres & Co. Ltd., Ferry street, Niagara Falls, Ont.

BIRCH CLIFF, ONT.—Cobber Thompson Elevator Co. has purchased a building and will establish a plant for manufacture of elevators and escalators.

COPPER CLIFF, ONT.—Ontario Refinery Co., in which the Consolidated Mining & Smelting Co., and the International Nickel Co., are interested, has awarded the steel contract to the Canadian Bridge Co., Walkerville, Ont., for the erection of a copper refinery here. The three buildings to be erected include an electrolytic tank house, 300 x 400 feet, concrete construction with lead lining; two casting buildings, each 200 x 300 feet. Fraser Brace Ltd., 107 Craig street, Montreal, Que., has the general contract.

HAMILTON, ONT.—Hamilton Boiler Works, 925 King street, west, will build a 1-story structural steel factory building to cost $20,000.

OSHAWA, ONT.—Skinner Co. Ltd. is having plans prepared for the erection of a factory here for the manufacture of automobile bumpers, etc. (Noted May 23.)

BURROUGHS FALLS, QUE.—Southern Canada Power Co., will start work immediately on the construction of a 2000-horsepower electric development plant here.

HUBERDEAU, QUE.—Bids will be called soon by La Cie d'Enterprises Publiques Ltee, 72 Mountain hill, Quebec, Que., for the construction of waterworks and electric plants here.

HULL, QUE.—Hull Steel Foundry Ltd., Montcalm street, has awarded general contract to Gordon Black, Leaside avenue, for $200,000 plant addition. (Noted July 11.)

MONTREAL, QUE.—Fairchild Aircraft Ltd., recently incorporated with a capital stock of $2,000,000, has purchased 265 acres near here, where it will build an airport, establish hangars and erect a plant for the manufacture of airplanes. (Noted July 18.)

TEMISCOUTA, QUE.—La Cie d'Enterprises Publiques, Ltee, 72 Mountain hill, Quebec, Que., will call for bids at an early date for the erection of electric plants here and Riviere a Pierre, Que.

Recent Incorporations

CHICAGO—Zemon Co., 11 South LaSalle street, has been incorporated with $20,000 capital to engage in a general contracting business, by Marcus J. Golden.

CHICAGO—Metal Machine Works Inc., 24 South Clinton street, has been incorporated with $25,000 capital to manufacture and deal in tools, dies, etc., by J. J. Weber.

CHICAGO—Multi Fuse Co. Inc., 4537 Lake street, has been incorporated with $15,000 preferred and 5000 shares of no par stock to manufacture and deal in fuse plugs, fixtures, etc., by R. Kite.

CHICAGO—Aeromatic Engineering Co., Glenlake avenue, has been incorporated with 2000 shares of no par stock to manufacture and deal in automobile and airplane parts, by R. E. Swanson.

CHICAGO—A. F. Dormeyer Mfg. Co., 2640 Greenview avenue, has been incorporated with 10,000 shares of no par stock to manufacture and deal in hardware, woodenware and mechanical specialties, by A. F. Dormeyer.

DANVILLE, ILL.—Stump Mfg. Co. has been incorporated with 500 shares of no par stock to manufacture and sell automobile lamp adjusters, machinery and devices, by W. E. Stump.

ROCKFORD, ILL.—Caldwell Window Equipment Co., Mead building, has been incorporated with 5000 shares of no par stock to manufacture and sell window appliances, weather strips, etc., by Leslie M. Caldwell.

FT. WAYNE, IND.—Klenzmotor Corp. has been incorporated to manufacture and sell pumps, tanks and machinery. Daniel G. Milligan, 2528 Hoagland avenue, is one of the incorporators.

PRESTONSBURG, KY.—Beaver Valley Coal Corp. has been incorporated with $50,000 capital, by A. J. May.

ALLSTON, MASS.—Smith Engineering Corp., 429 Cambridge street, has been incorporated with $10,000 capital to engage in business as toolmakers, brass founders, metalworkers, etc. Herman R. Smith is president.

New Trade Publications

STEEL CASTINGS—New economies in buying steel castings are listed in a bulletin by Sivyer Steel Casting Co., Milwaukee.

FOUNDRY FLASKS—Hines Mfg. Co., Cleveland, describes its foundry flasks in a catalog just issued. Flasks for use in aluminum, brass, iron and steel foundries are listed and illustrated.

DRYING EQUIPMENT—Drying Systems Inc., 1800 Foster avenue, Chicago, has issued a bulletin on its unit type, induced draft heaters for drying and baking processes.

AIR COMPRESSORS—General Electric Co., Schenectady, N. Y., has published a series of bulletins on its single and two stage, portable and stationary, reciprocating air compressors.

COMPRESSORS—Allen Air Appliance Co., 452 Lexington avenue, New York, has issued an 11-page booklet on its centrifugal compressors and their uses.

BLOWERS—Connersville Blower Co., Connersville, Ind., has published a folder on its gas boosters. Principles of operation, features and advantages are discussed.

MOLD HANDLING EQUIPMENT—Cleveland Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., in a recent folder illustrates the uses of its equipment in foundries.

CORE OILS—Fordath Engineering Co. Ltd., West Bromwich, Eng., has published a bulletin on its core oils and foundry equipment. The company has established a research laboratory to better its product and its applications. Illustrations show cores made with the company's oils and castings from these cores. Numerous items of foundry equipment are illustrated.

WELDED CHAIN—American Chain Co. Inc., Bridgeport, Conn. presents in a current leaflet tables of sizes, weights, number of links per foot and other information and suggestions on the use of welded chain.

OIL HEATING—Oil Heating institute, 342 Madison avenue, New York, made up of manufacturers of oil heating equipment, has issued a catalog of the devices produced by its members, as a guide to the proper equipment to choose for various installations. It is illustrated.

ELECTRICAL DEVICES—Electric Controller & Mfg. Co., Cleveland, has issued a number of bulletins on its products: Dinkey controller for use with duplex drives using two motors mechanically connected to the same drive; crane switchboard of 115-volt and 550-volt ratings; limit stops with new type contactor.

HEAT TREATMENT—Whiting Corp., Harvey, Ill., is circulating a bulletin on heat treatment of gray cast iron, the latest of the bulletins containing information and data collected by the director of its foundry research department. The succeeding bulletin will be the first of a series of five on cupola practice.

RAIL STEEL REINFORCEMENT—Rail Steel Bar association, Chicago, has prepared for architects and engineers a booklet telling of the characteristics of rail steel for concrete reinforcing. It contains a description of the method of manufacture and specifications for rail steel bars.

STARTERS—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued two folders describing the features, application, operation and construction of magnetic resistance type starters for squirrelcage induction motors and magnetic starters for wound rotor induction motors.

SPEED REDUCERS—Palmer-Bee Co., Detroit, has issued a bulletin describing and illustrating the various types of its speed reducers. Tables are included that give help in selecting reducer equipment. Working drawings and illustrations showing assembled and disassembled views of the reducers. Typical layouts and installations are shown.

CONCRETE ROOF SLABS—Federal Cement Tile Co., Chicago, is distributing a catalog and book of roof standards for its concrete insulating roof slabs. It contains specifications, weights, dimensions and other data. Illustrations show installations of these slabs on structures of various kinds. Methods of laying are also shown in illustrations.

SLING CHAINS—S. G. Taylor Chain Co., Hammond, Ind., is preparing for issue about Sept. 1 a catalog of its chain, in which it has eliminated many items in line with department of commerce simplified practice recommendations. It also will present definite information relating to diameter and dimension of joiner and links of sling chains.

PHILADELPHIA DISTRICT STEEL SERVICE

Mr. Thomas J. Moore, Manager, and his Ward-house staff have provided a steel service that is outstanding in the Philadelphia district.

EDGAR T. WARD'S SONS CO.

(Division of COLUMBIA STEEL & SHAFTING CO.)

PHILADELPHIA WARD-HOUSE—Cedar and Westmoreland Streets

BOSTON, 44 Farnsworth St.
BUFFALO, 39 River St.
CHICAGO, 1455 W. 37th St.
CLEVELAND, 1210 E. 55th St.
DETROIT, 1300 Fort St., West
MILWAUKEE, 57 Ave. and Burnham St.
NEWARK, 400 Frelinghuysen Ave.

The World's Largest Distributors of Fine Steel Products

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ to 3¾-inch	56 off
4-inch	59 off
4½ to 6-inch	48 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¾ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	42 off

SEAMLESS HOT ROLLED

1¾-inch	39 off
2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot.....	.20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot....	.20c
Plates ordered 7.65 pounds square foot	.30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c